THE MARINE REVIEW

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Turn Spotlight on Safety Problem

Public Must Be Educated Up to a Just Appreciation of Safety Principles—How Vicious Legislation May Be Curbed

NEVER before in the history of our country has there been such an insistent demand for greater safety at sea as is being voiced at the present time. Recent marine disasters on our inland lakes and elsewhere, coupled with the hazards of war, have aroused public feeling on this subject to a much higher pitch than usual and there is little doubt but that congress, which is soon to reassemble, will be asked to take drastic action.

In its demand for a mitigation of the hazards of navigation the public occupies a thoroughly sound position in which every person who has the true welfare of our maritime interests at heart will concur. It is unfortunate, however, that the people, who have every right to demand the utmost in safety for passengers and crews, in the main, understand but little of the technical and practical sides of the problem and therefore are frequently led astray by unprincipled individuals who do not hesitate to further their own selfish ends under the pretense of serving the public.

A Convenient Cloak for Selfish Aims

A great deal of the so-called safety legislation urged upon congress is backed by individuals or organizations whose real motives are entirely foreign to the best interests of safe navigation. As a result, both the steamship interests and the public suffer. Two steps are necessary to remedy this situation and foil the vicious legislation that is proposed—and some of it passed—at every session of congress.

In the first place, the vessel-owning interests should realize that the people must be educated, largely through the newspapers, to an appreciation of the correct principles of safety. The policy of silence that many steamship interests have followed in the past must be broken. The railroads in their successful fights on full crew legislation in many states have thoroughly demonstrated the tremendous power of a publicity campaign that makes clear facts and conditions ordinarily hidden from the people. Safety facts must be advertised and this brings us to the second step in the program.

Before safety facts can be advertised, the vessel owners must be absolutely sure that their safety measures are complete to the last detail and that, as a matter of fact, their fleets are as thoroughly immune from hazard as human ingenuity and vigilence can make them. Ordinary safety precautions will not suffice; they must be extraordinary.

Nip Accidents in the Bud

In his campaign for maximum safety, the vessel manager will find he must go far beyond the requirements of the government and the law. There is much loud talk in the halls of congress and the public press about safety at sea, but the man who goes into the safety problem thoroughly soon finds he is working alone and without assistance, save that which he gains from mutual organization. The laws dealing with safety and the ideas that attract attention in the newspapers have to do largely with apparatus for saving life after the accident happens.

Accident prevention is the essence of the safety movement.

This point seems almost entirely lost on the public, but it emphatically should not be lost on the vessel owner. In the last analysis your safety organization, the success with which you have instilled the spirit of safety into your employes, is more important than your life boat equipment. The latter is of use after disaster overtakes you; the former *prevents* the disaster from occurring.

Organize for defense against the common enemy of all mariners—accidents. And remember that while the big disasters are spectacular, the common run of injuries are more important in the aggregate. Appalling accidents occur but seldom, minor injuries form a continuous menace that must be fought stubbornly. But if it is fought intelligently, the results will be successful.

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Inaugurate a New Safety Campaign

Time is Ripe for Further Efforts in Prevention of Accidents—Organization All Important—Opinions of Representative Managers

IN RECENT months we have witnessed an unfortunate increase in marine disasters, due to unforeseen causes and the abnormal situation resulting from the war. Safety measures therefore are of paramount importance at this time and the opportunity for instilling renewed vigor into safety campaigns is at hand.

This article proposes to deal with safety organizations and the results that follow a definite safety program. Vessel owners and managers, deck and engineer officers on shipboard, able seamen and even cooks and stewards appreciate that the way to avoid the inevitable consequences of an accident is to prevent the accident from happening. Life boats, self launching life rafts, life preservers, fire fighting equipment, wireless apparatus and many other safety devices are essential but their usefulness is apparent only after disaster has appeared; their function is that of the Red Cross staff in battle. Safety organization, personal caution and accident prevention on the other hand form a defensive armor that makes the services of the hospital corps unnecessary.

Eternal vigilence is the price of safety and the requisite vigilence cannot be secured without the aid of a definitely organized safety program.

In order to bring to light important facts regarding the safety organizations of successful steamship managers, *The Marine Review* recently addressed a letter to over 150 steamship companies carrying passengers in American waters. The most valuable of the suggestions made in the large number of replies received are set forth in the following paragraphs, many of the letters being quoted substantially in full.

In order to focus the discussion on definite points, the following questions were asked in the letter of inquiry.

Do you have a safety department?
Do you employ a safety director?
Have you any safety inspectors?
Have you found it advisable to organize "safety committees" among your crews, to make inspections and report unsafe conditions and practices to proper authorities?
Have you had any experience in utilizing bonuses or prizes in stimulating interest in "safety first" among your crews?
Do you keep a record of all accidents?
If so, how do you use this record to decrease the number of accidents and injuries on your vessels?
Do you publish any safety bulletins, circulars, etc., for distribution among your employes?
Do you ever hold meetings of the navigating and engineering officers of your fleet to discuss safety matters?

Most of the larger steamship companies carrying passengers, the replies indicated, have regularly organized safety departments. Usually the office of safety director is filled by the general manager or operating superintendent. In many cases safety committees are organized on the vessels themselves, working under the direction of the captain. These committees, it has been found are of inestimable value in preventing the endless succession of minor accidents and injuries that are likely to occur on shipboard. And it is against these minor casualties that the bulk of the attack should be directed.

The replies also indicate that it is very essential to keep a record of *all* accidents, however trivial, for study and analysis.

Keep Your Men

The necessity for a stable organization is emphasized in a number of the replies. Passenger vessels, it is contended, cannot be navigated safely by green crews and energetic steps should be taken to prevent constant changes in personnel. Several of the most successful steamship lines, from the standpoint of safety, on the coasts and the Great Lakes pride themselves on the fact that they train their own engine room and navigating officers and that their vessels are manned by the same crews through successive seasons. Undoubtedly this permits the development of teamwork and has a powerful influence in reducing accidents.

Safety is a personal matter and one of the largest steamship lines on the Great Lakes recognizes this fact by having its vice president and superintendent make a personal inspection of the vessels in the home port every week. This practice should be highly commended and is of particular value inasmuch as it gives the officers and men in lower ranks visible evidence that the highest officials of the line are personally interested in reducing accidents.

A number of communications pointed out that many avoidable injuries are due to intoxication. The rule prohibiting members of the crew from bringing liquor aboard in any form is universally and rigidly enforced. There is evident also a growing tendency to exercise stricter supervision over the habits of employes while off duty and it is believed the time is not far distant when employment will be denied to persons known to be habitual users of intoxicants or as frequenters of saloons.

Liberal extracts from several of the letters received from steamship managers are appended. The vice president of a prominent line on the Great Lakes writes as follows:

"We have safety inspectors on each of our steamers, and committees including the captains, chief engineers, stewards and pursers, who make a personal inspection of the steamer once each week, and report in writing the result of this inspection. The vice president and general superintendent also make an inspection of the boats once each week at 4 p. m. and they have a personal knowledge of the boat, its safety appliances, etc.

"We give a bonus of $50 each fall to the crew that lowers and handles its lifeboat with the greatest efficiency. This includes running to a certain stake and returning. We also give a bonus of $200 each fall to the boat crew which makes the best showing in a boat rowing contest. I am pleased to say that this prize is usually won by either the crew made up of firemen or the steward's department. The able seamen have never, at any time, been successful.

"A record is kept of all accidents, and by the issuance of instructions from time to time, cautioning our men in regard to Safety First methods about the open hatchways, and to take no risks, we believe we have reduced the number of casualties on our steamers to a minimum. Safety First is discussed once each month by all employes on our steamers."

The general manager of a large steamship company operating on the Atlantic coast writes:

"In the first place we endeavor to live up fully to the government rules and regulations for the preservation of life and property on the sea. We co-operate with the government inspectors in every way, and have done everything we could to safeguard the lives of our passengers and the property entrusted to our care. Our general orders to our masters and officers cover the ground thoroughly, and emphasize the fact that the safety of lives and property is to be their first consideration. Life saving and fire drills are regularly held on our ships, reports of which are sent to the proper supervising officials who check them up in order to see that they are properly carried out. Reports are also made regularly in regard to the condition of all equipment; these reports are sent through the masters and superintendents and finally to the general manager. The masters are called upon to inspect their ships daily, and daily written reports are made to them from each department of the ship in regard to conditions.

"We do not have a separate safety department, such matters being handled through the general manager's office. We have offered a certain bonus for safety work. Reports are made of all accidents of whatever character, and each one is scanned, and if necessary,

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investigations are made or instructions issued in order to prevent further accidents of a similar character. No safety bulletins are issued to masters of ships, as we do not feel they require them, but safety bulletins in regard to personal injuries, as furnished by our casualty companies, are duly circulated among our employes.

"Meetings are not held between the navigating and engineer officers of our fleet to discuss matters of safety, as their active employment prevents such general meetings, but our masters have arrangements for keeping each other advised of any matters of interest, and of course they are furnished with all government publications in regard to obstructions to navigation, etc. The wireless is also employed by our masters to keep each other informed as to weather conditions along the coast, and obstructions they might meet with.

"I might say in conclusion that we are doing everything we possibly can in order to prevent accidents of every description, as they are very costly, and the less accidents the greater commercial success we attain. We find a great many suggestions are made and we are offered all kinds of devices for the prevention of accidents, but our experience is that many of them are utterly impracticable, especially in the coastwise business. The kind of business carried necessitates a certain type of ship, which places limitations on the devices that may be used. I might say that our experience in regard to accidents is that they are not caused so much by the lack of mechanical appliances as by failure of the human element."

"Our Men Grow Up In Our Employ"

Another eastern steamship company writes as follows:

"We have no special safety organization other than personal supervision, keeping in close touch with the operating officers of our steamers, treating them with every human courtesy and making them feel their personal responsibility. In fact we try to make our interest their interest. We employ no one that uses spirituous liquor. It is very unusual that we are compelled to take on outside men; most all our men grow up in the employ of the company and are promoted from deck hands and firemen to become engineers and captains. In our judgment the most practical way to reduce the number of accidents is to have efficiency in the operating department of the steamer, with perfect confidence, personal contact and co-operation between the employe and management. This is far better than a lot of drastic and fool laws, engineered by men that have no knowledge or experience in the operation of vessel property and are moved entirely by sentimental or personal or political motives."

The president of small company operating on the Great Lakes advises:

"As our fleet is small, consisting of only three boats, we do not have a safety department or employ a safety director, but hold frequent conferences with the officers of our boats and make very frequent personal inspections, and in that way we aim to keep the entire crews impressed with the idea that safety first is the important thing to consider. We instruct our employes both on land and on shore to pay particular attention to avoiding danger and wherever safety precautions can be taken we are only too glad to do anything that can be suggested toward that end."

Safety First on the River

The head of another small fleet navigating the Ohio and Green rivers contributes the following remarks:

"We keep a record of accidents. These records are studied, the causes of the casualties are analyzed, and instructions are given to the superintendent and to the officers of the boats that are calculated in our best judgment to prevent the recurrence of similar accidents. Our superintendent and the masters of our steamers are under instructions to hold periodically what might be termed 'Officer's Schools' for the instruction and examination of the officers and members of the crews in all details of their stations and their duties in the event of accidents."

The following was received from the head of a steamship company operating on one of the rivers of the south:

"I give this feature (safety) my personal attention, at all times warning the officers against carelessness and of the necessity for being sure regardless of time. *Time lost in being careful is well spent.* My observation is that more accidents are caused by drunkenness of the officers and crew of the boat than any thing else. We are very careful not to employ a man that will drink while on board, nor will we allow an officer to leave port on one of our boats who shows signs of having been drinking, believing that he would not be safe to navigate, or handle machinery in that condition."

Regarding the importance of the personal element, the general manager of a large company on the Great Lakes states:

"For ourselves, we have always felt that the personnel of our steamer crews is perhaps the first and foremost factor of safety, for no matter how good a ship or how extensive her life saving equipment, a mistake on the part of the mariners or engineers might be fatal. I think we are particularly fortunate in this regard, as every one of our chief officers in every department has grown up in our service, and is familiar by personal contact with the management's desires, and so at all times and under all circumstances makes safety the first and foremost consideration. The chief officers of each steamer hold weekly meetings on board of their respective ships. At these meetings they discuss safety measures, the sanitary condition of the ship and general discipline. These reports are written out and exchanged between ships, so that each ship can see what the other ships are doing in this direction. We, of course, keep a record of all accidents, however slight, and try to profit by such experiences."

An official of a large Mississippi river line writes in part as follows:

"Not only are our steamers inspected by the U. S. local inspectors, but there is not a trip that one of the owners does not go aboard each vessel and note its condition. Should he find any defects, their existence is immediately called to the attention of the officer in charge. In this way we have obtained splendid results, and we sincerely trust that it will be a long time before an accident of any kind befalls one of our steamers. But even should such an unfortunate thing happen, with our boats equipped as they are, the methods which we are using to avert accidents would, we believe, reflect credit on the 'Safety First' system which we have evolved."

The chief marine superintendent of the largest Canadian steamship company advises tersely as follows:

"The safety committee on board each of our ships is made up of the commander and heads of the different departments on board. The commander is the safety director. There is a safety inspector on board each ship in the person of the master-at-arms. A complete system of inspection consisting of a series of rounds of the ship at stated periods during the day and night, with an official inspection at 10:00 a. m. daily by the safety committee (commander, doctor, etc.), has been instituted. Bonuses are given for the safe navigation of the ships and general satisfactory results. A complete record is kept of all accidents, and methods to prevent their recurrence are introduced."

Safety First on Lake Freighters

While the inquiry conducted by *The Marine Review* was confined to steamship companies carrying passengers, this article would not be complete without some reference to the unusual safety program of the Lake Carriers' Association, an organization of vessel owners in the bulk freight business on the Great Lakes. The Lake Carriers' safety system is one of the most complete in existence and since it covers the activities of approximately 12,000 vessel employes, is well worthy of consideration. Its various features have been fully covered in previous issues of *The Marine Review,* but it is believed a recapitulation is in order at this time. For the following succinct summary, we are indebted to the *Monthly Bulletin* of the American Iron & Steel Institute, New York.

"Much thought, care and energy have been expended by the welfare plan committee of the Lake Carriers' Association in the endeavor to minimize cases of personal injury. The results have been very gratifying. In this particular division of the work, Harry Coulby, president of the Pittsburgh Steamship Co., has been particularly active. He has made it the keynote of his talks with the masters and engineers as well as at the annual meetings of the Lake Carriers' Association. He has been very quick to seize upon anything that might contribute to this end. No man has done more to awaken the conscience of the individual as to his personal responsibility. Last year pennants were given to the forward and after ends of the ships of his fleet with the understanding that they were to remain flying so long as no injury occurred which

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involved a loss of time to an individual. As soon as a single injury occurred in either end of the ship which involved a loss of time, the pennant for that particular end of the ship was to come down and was not to be flown again during the entire season. If a ship came through the season without any such injury to the members of the crew the second mate got $25 and the second engineer $25. Through this simple device the Pittsburgh Steamship Co. last season reduced its personal injuiry cases by 68 per cent, though its personal injury record for previous years had been as good as anybody's. Obviously, to achieve such a record there must have been uncommon vigilance displayed on the part of the officers. In making fast, the mate was undoubtedly watching the line just as keenly as the man handling it, and if there was any loose material lying around to be tripped over it was removed at once.

World Wide Movement

"The Safety First movement is a world-wide campaign and the Lake Carriers' Association is doing its share. There is really no more important work than this, and it has its reward not only along humanitarian lines but in actual dollars and cents. Every man is born with two eyes, two ears, two arms and two legs, and he wants to go through life with them. Yet by reason of a little thoughtlessness he may lose one of them to his life-long regret. Monetary compensation is cold comfort for such a loss. It is doing far greater service to awaken a man's understanding as to his own liability. A man may do a job aboard ship in such a way as to incur a possible injury, whereas there is a way of doing it by which no injury could possibly occur. It is in pointing out the right way of doing things that the welfare committee is doing a real service, and it has in mind at present the making of moving picture films showing the right and wrong way of doing things aboard ship. For instance, there is no likelihood of a man falling into a hold of a boat if he handles the wooden hatches with a club instead of with his hands; nor will he ever fall through an open hatch if, on his way to the mess room, he walks along the side of the ship instead of over the hatches; nor will he ever be hit by any falling ore when the vessel is unloading if he avoids the side of the ship upon which the unloading machines are working. Splendid moving pictures could be made of instances such as these.

"Most accidents occur through the carelessness of the individual, but the welfare committee is doing all that it can to lessen accidents due to personal thoughtlessness. For that reason dangerous places are distinctly marked, railed off, or covered with protecting guards. In this work the welfare plan committee is greatly aided by the industrial committee formed from among the masters and engineers. In fact, without the active and unremitting assistance of this committee of captains and engineers, the general committee in charge of welfare work would make but little real progress, as the men aboard ship are certainly more familiar with the vicissitudes of the days' work than the committee itself. During last summer the welfare plan committee prepared safety signs which were distributed to all vessels in the association. They exhibit a red disc, the universal danger sign, and are lettered in white against a background of blue enamel. One is placed on the after side of the forward house and one on the forward side of the after house.

"Three or four years ago a few of the companies, notably the Pittsburgh Steamship Co. and the Cleveland Cliffs Iron Co., established eastbound and westbound courses on the lakes for their vessels. It was the understanding that the westbound vessel should follow an inside course and the eastbound vessel an outside course in Lakes Huron and Superior. Fog is quite prevalent on the lakes during the summer months, and it was to minimize the possibility of head-on collisions that the courses were adopted. Practically all collisions on the lakes in fog are head-on. During the years of trial it was very clearly demonstrated that the observance of inside and outside courses contributed to reduce the number of accidents. They have been, therefore, adopted by the Lake Carriers' Association upon the recommendation of the committee on aids to navigation, which is made up of captains selected from a number of fleets. These courses have greatly contributed to the safety of navigation and therefore of life and property on the lakes. In fact, there was only one total loss on the Great Lakes during 1914 from collision in fog.

Campaign Against Intoxicating Drink

"The change which is gradually spreading over the face of the whole world in relation to drink, is one of the most extraordinary things in the evolution of the human race, and nowhere is this metamorphosis more apparent than on the lakes. A quarter of a century or so ago the first thing that came aboard a vessel was the whiskey jug. It is, therefore, highly significant that among the recommendations of the committee of captains and engineers of the Lake Carriers' Association the following paraghaph occurs:

"'That all masters and chief engineers of the Lake Carriers' Association be instructed that temperance shall be encouraged as much as possible among the crews and be made a consideration for promotion as between men of otherwise equal merit. Further, that notice to the effect that drinking is prohibited aboard the boat and that no person be allowed to carry liquor aboard the vessel be posted in the rooms of the deckhands and firemen. Further that the Lake Carriers' Association provide temperance pledges and buttons in their assembly rooms and aboard the vessels for free distribution among the men.'

"The importance of that recommendation lies in the fact that it came from the men themselves and it created a powerful impression upon the minds of the members of the association. The board of directors acted upon it at once and caused signs to be posted in the forward hall, in the mess room and on the after side of the engine room bulkhead of the steamers enrolled in the association, to the effect that intoxication must not be tolerated, and that bringing liquor aboard ship was strictly prohibited. On barges the signs were placed in the forecastle and dining room.

A Pernicious Practice

"President Livingstone referred in his annual report to the campaign against drink in a striking paragraph which has been widely quoted in the press throughout the country, as follows:

"'Of all the pernicious practices going on in this world, drink is at once the most common and most dangerous, and more sins can be directly traced to it than to any other cause. It is an exceedingly easy habit to drift into and a difficult one to part with. The most deluded of all mortals is the so-called "moderate drinker." The moderate drinker does not know when to quit. He has the idea that his acquaintances and friends are drinking too much and wakes up some morning somewhat surprised to find that they have the same opinion of him. There is only one safe thing to do, and that is to cut it out. If the signs of the times are being read aright, that is exactly what the world is doing. The sentiment against drinking is growing very rapidly, and the time is not far distant when the so-called moderate drinker will not be employed. Large undertakings cannot be handled by men who are addicted to drink. No man is quite normal if he has taken even a single drink, because its immediate effect is to alter his normal point of view. In all industrial enterprises the drinking man is the first to be laid off in times of depression, and the last to be taken on in times of prosperity.'

"The result of the campaign have been immediate, J. H. Sheadle indicating in his annual review that the accidents attributable to intoxication had been diminished by 75 per cent during the past year. Mr. Sheadle's remarks in this connection were as follows:

"'In the matter of personal injuries the season's record shows improvement. It is probable that a few personal injuries were not reported, but some comparisons may be seen in the figures that follow. In 1913, 171 boats reported 312 injuries, or 1.82 per boat; in 1914, 160 boats reported 250 injuries, or 1.56 per boat, a decrease of nearly 15 per cent. Of the accidents in 1914, 164 were due to carelessness on the part of the injured, 59 through negligence of co-worker, and 27 were unavoidable.

"'It is evident from these figures that men have been more cautious themselves, but on the other hand, those injuries which were avoidable, and cases where the co-worker contributed, increased 25 per cent over 1913, so that while there was a favorable showing in the matter of accidents to men by their own

(*Continued on page* 375.)

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Sailing Ships Are Again in Demand

War Causes Shortage of Steam Tonnage and Brings Golden Harvest to Wind Jammers—High Rates Paid

WHEN Captain Scott of the British bark HOLT HILL went to the New York custom house to clear for Melbourne one day a short time ago he found that Captain Lawrence was clearing the sturdy bark INVERMAY for the same destination. All the salts along Staten Island shore watched both vessels pass out with sails glistening in the sunlight, but not only was the start an even one, but both ships were loaded deep with general merchandise. Men who followed the deep in the days before the steam tramp drove the windjammer from most of the seven seas do not speculate so much upon the future of the deep sea sailing vessel just now, because, since the beginning of the world war those vessels have been coming into their own again. Every week one or more sailing craft passes out of the Narrows, down New York bay and heads off shore for a transatlantic voyage, or turning south follows the trade track to South America, or to some southern port to load for a long voyage.

The demand for sailing bottoms is limited only by the supply, and shippers who employ sailing vessels are said to find it difficult to obtain tonnage suitable for transatlantic or South American service. In the coastwise trade, however, the demand for sailing craft at this time is rather light, and the tendency of rates is slightly easier.

A shipping agent figured out that every time a torpedo sends a steam propeller craft to the bottom the demand for the old sailing vessel is increased, and this increase will make a charter demand that will have its effect upon the sailing industry long after this war is over. The shipyards of the world are working night and day.

South street, New York, is humming with the sounds of commerce, and not within the memory of many a sailing master has there been such a boom.

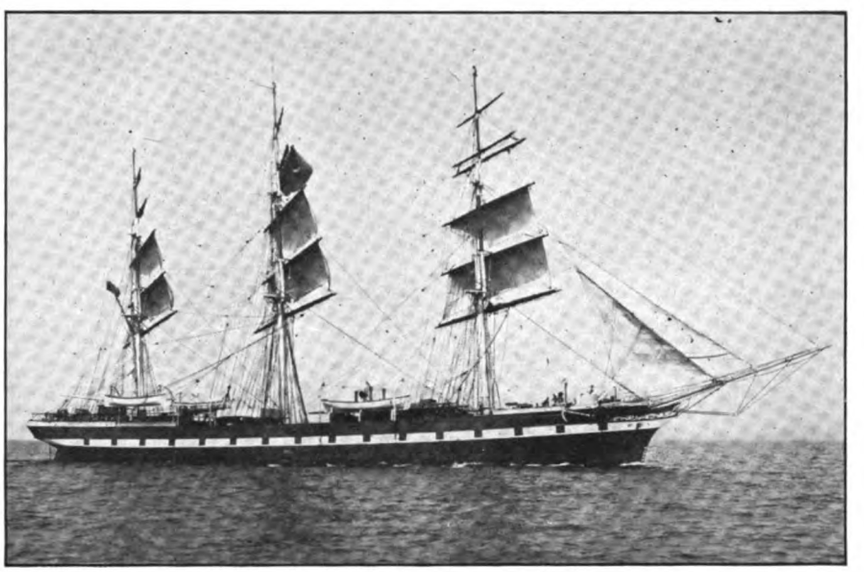
"What have you got to charter?" is a question that often travels over the telephone wires, and Old Opportunity is going up and down South street knocking at doors. Always the demand is cargo space, and still more cargo space.

The bark DAYLIGHT is bound down the coast on her way to the Panama canal, and once through that waterway she will haul away on the long track for Shanghai. She is deep set in the water with cargo, and Captain Anderson walks his quarter deck confident that the gods will favor his voyage. Another craft that followed HOLT HILL and INVERMAY to Australia is AMSDALE of Liverpool. The ship BRYNDHILDE, Captain Duffy, sailed recently from Pier 26, Brookyln, for a long voyage to Archangel, Russia, and at Pier 27, next to her, a force of longshore workers got the American ship VINCENT ready for a voyage to the same destination in record time. A trim craft with a wealth of sail area is the bark VILLE DE DIEPPE, Captain Antonsen in command, and the Norwegian flag flying over her decks. She was at Bayonne loading for Rouen.

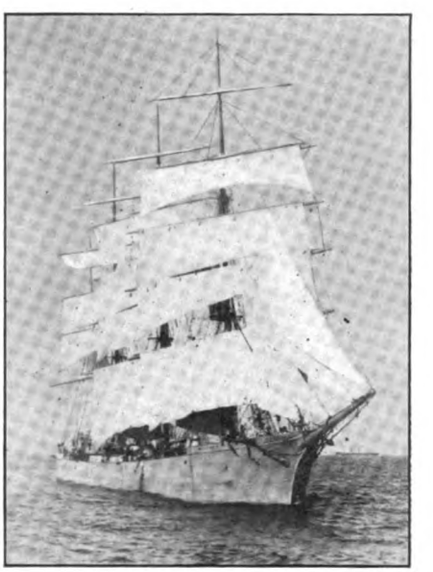
According to the latest maritime statistics, there were recently at New York harbor either loading, unloading or awaiting cargo eight ships, ten barks and 91 schooners. Most of the last named are in the coastwise trade. Some, like AUGUSTUS WELT, which goes to Norfolk to load for Rio Janeiro, will carry cargo to South America or to ports in the West Indies.

An interesting feature of our trade during the European war is the increased value of the cargoes. According to the bureau of foreign and domestic commerce, department of commerce, as published in detail in the July issue of *The Marine Review*, our exports in American vessels alone rose from $111,700,000 in the eight months ended with March, 1914, to $178,000,000 in the period ended with March of the current year, during which time the tonnage of American vessels cleared in the foreign trade decreased 9 per cent.

This condition has put the sailing ship men in a position where they can pick and choose. This is shown by the talk about the nature of the cargoes to be carried and the objection to some brokers for "dirty" cargoes, while only a few months ago captains were glad to get offerings of any kind at almost any rate they could.



A RUSSIAN SHIP OUTWARD BOUND



AMERICAN SHIP WILLIAM P. FRYE—SUNK BY THE GERMANS

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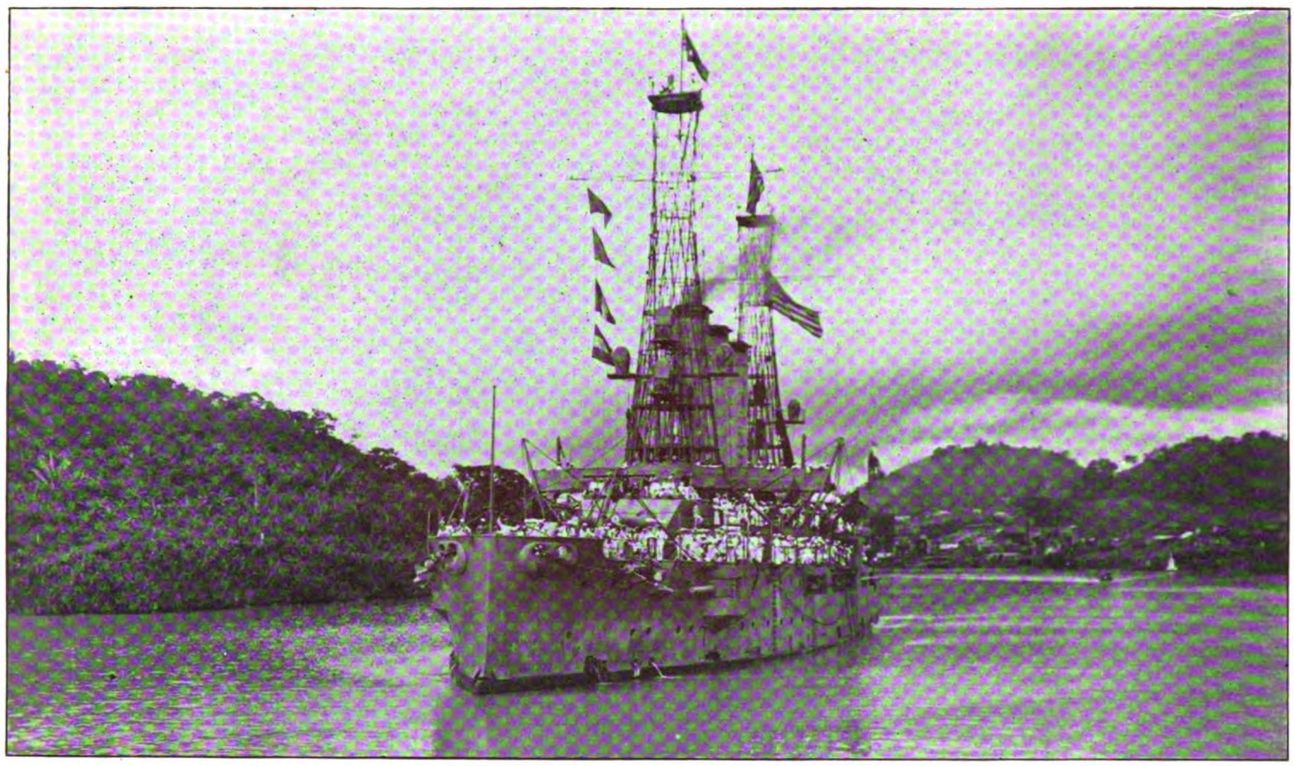
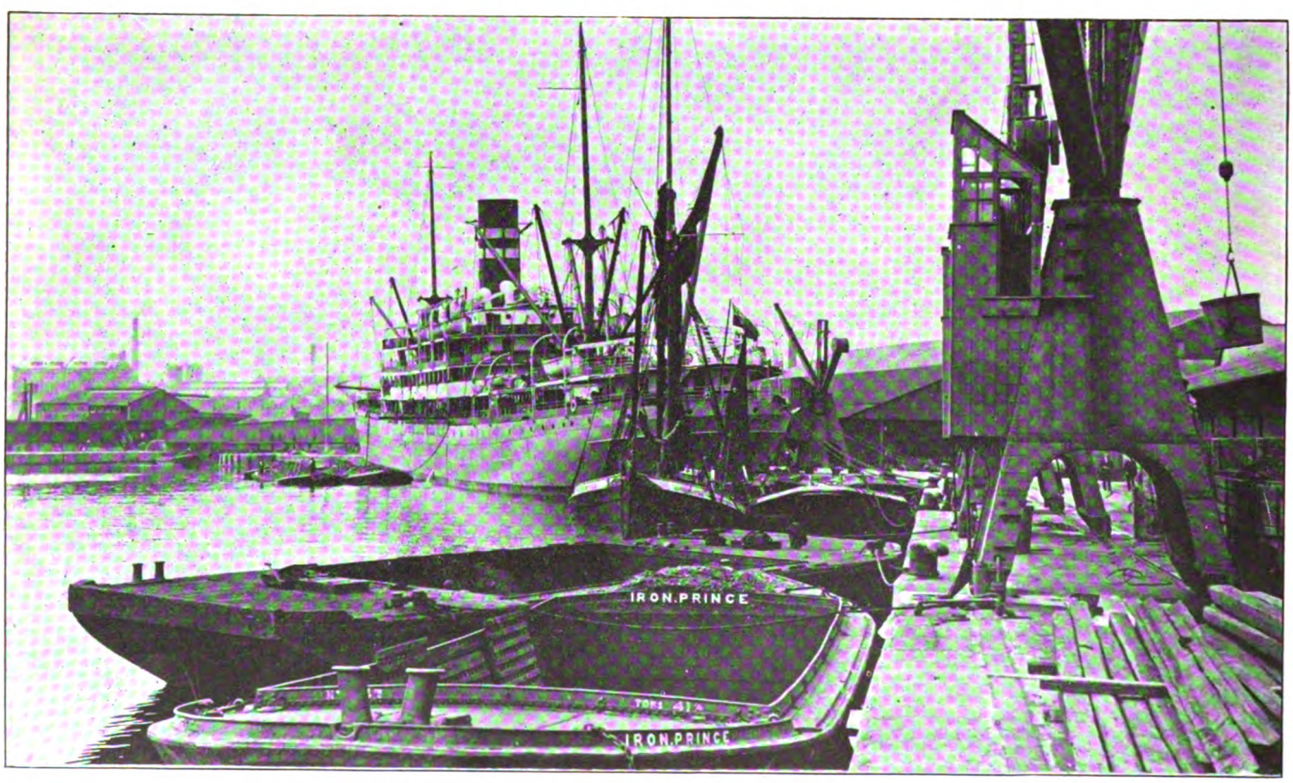


FIRST BATTLESHIP THROUGH THE PANAMA CANAL

In addition to its tremendous commercial value, the canal is an important factor in our system of national defense. Its existence increases the efficiency of the navy tremendously. MISSOURI was the first battleship to pass through the great isthmian waterway. She is shown between Cucaracha and Pedro Miguel.



TILBURY DOCKS OBJECT OF GERMAN ATTACK

This illustration shows a portion of the great Tilbury docks, London, which German Zeppelins have repeatedly attempted to bombard.

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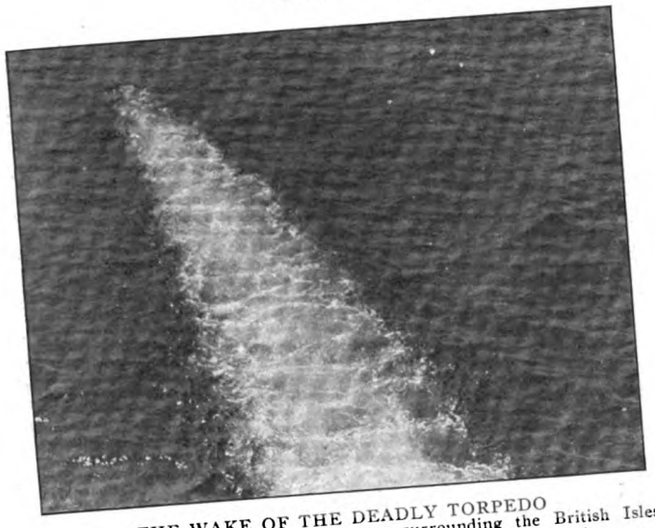
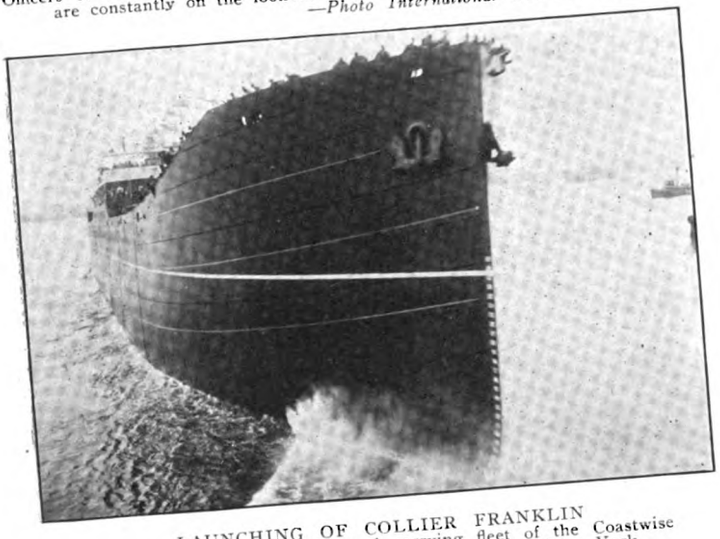


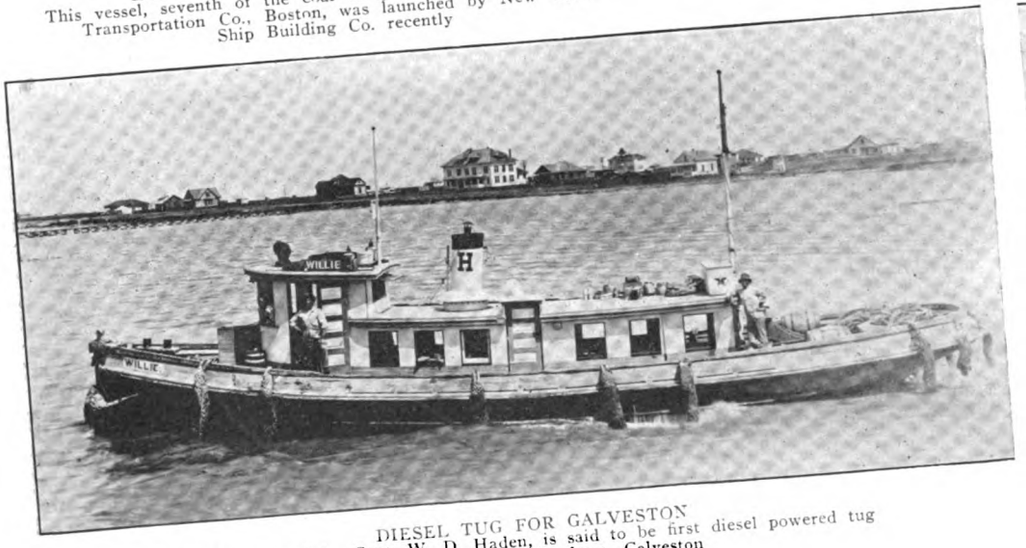
THE WAKE OF THE DEADLY TORPEDO
Officers of vessels navigating the waters surrounding the British Isles are constantly on the lookout for this streak in the water
—*Photo International News Service*

RANGE FINDING ON BATTLESHIP UTAH
Officer operating a range finder during recent maneuvers in the war game participated in by the battleship UTAH
—*Photo International News Service*



LAUNCHING OF COLLIER FRANKLIN
This vessel, seventh of the coal carrying fleet of the Coastwise Transportation Co., Boston, was launched by New York Ship Building Co. recently

SPONSOR FOR FRANKLIN
Mrs. Arthur Crowley, wife of Capt. Crowley, assistant general manager, Coastwise Transportation Co.



DIESEL TUG FOR GALVESTON
WILLIE, owned by Capt. W. D. Haden, is said to be first diesel powered tug of large size to hail from Galveston

LUMBER HOOKER AT NEW ORLEANS
Scarcity of steamers is bringing sailing vessels back into the southern lumber trade

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Government Underbids Private Yards

Bids have been opened by the United States coast and geodetic survey for the construction of the steamer SURVEYOR, which was described in the July issue of *The Marine Review*. The plans of SURVEYOR also were published in the August issue. There were 12 bids submitted including five from government navy yards and seven from private corporations. The navy yard at Portsmouth, N. H., submitted the lowest bid, $163,250; the Manitowoc Shipbuilding & Dry Dock Co., Manitowoc, Wis., was second with a bid of $189,000 and the Seattle Construction & Dry Dock Co., Seattle, Wash., was third with a figure of $210,000.

A Ridiculous Bid

Practical ship constructors consider the Portsmouth bid rather ridiculous in view of the specifications. It is a well known fact, however, which has been pointed out repeatedly in *The Marine Review*, that government navy yards conveniently forget such items as depreciation, overhead, interest on investment, etc., in figuring the cost of their work. Private concerns are forced to take these items into consideration or go out of business. There is a strong feeling, therefore, that the government is taking an unfair advantage of the private ship yards of the country by permitting navy yards to compete with them on an unequal basis. Our privately owned yards might be of tremendous importance in a time of war, a fact which departmental officers at Washington seem to overlook when they have contracts to let.

Naval Cost Keeping is Fearful and Wonderful

The discrepancy in the bids of the Portsmouth and the Philadelphia yards is interesting as an indication of the results achieved by the wonderful naval cost keeping methods. It is difficult for an ordinary person to understand why the Philadelphia yard should submit a bid practically $81,000 higher than the New Hampshire yard on the same job. The difference in the two proposals amounts to only 50 per cent of the lower figure. This discrepancy is the more interesting when it is remembered that conditions at the two yards are practically identical as regards equipment and facilities, cost of raw material, wage rates, etc. It is difficult to see why the bids of the Portsmouth and Philadelphia yards should have shown any greater difference than the proposals that were submitted by the three private yards on Chesapeake bay. Interesting details of the 12 proposals are presented in the following table:

The U. S. Navy Yard, Portsmouth, N. H.	$163,250
The Manitowoc Shipbuilding & Dry Dock Co., Manitowoc, Wis.	189,000
The Seattle Construction & Dry Dock Co., Seattle, Wash.	210,000
The Anderson Steamboat Co., Seattle, Wash.	211,790
The Mare Island Navy Yard, San Francisco, Cal.	211,900
The Mare Island Navy Yard, San Francisco, Cal., alternate	209,300
The Navy Yard, Norfolk, Va.	220,000
The Ellicott Machine Corporation, Baltimore, Md.	224,000
The Pneumatic Engine Co., San Francisco, Cal.	234,000
The Pneumatic Engine Co., San Francisco, Cal., alternate	231,000
The Navy Yard, Puget Sound, Wash.	229,789
Pusey-Jones Co., Wilmington, Del.	242,475
The Navy Yard, Philadelphia, Pa.	244,245
The Speiden Shipbuilding Co., Baltimore, Md.	266,700

Commenting on the government's practice of permitting navy yards to compete with private bidders, a prominent ship building concern on Chesapeake Bay has advised *The Marine Review* as follows:

"It is certainly a crime allowing the government navy yards to go into competition with private yards, and, the system of awarding contracts on estimates has certainly recently been demonstrated to be a fallacy. The right of the government to do its own work, we do not think anybody disputes, but if they propose to do their work in the navy yards, they should not put contractors to the expense of estimating on these jobs and bring them into competition with people who, as you say, have no regard for any overhead or depreciation cost and we think that the Chamber of Commerce of the United States should take this matter up and carry it out to the finish."

Pacific Mail Ships Sold

IN ANSWER to a petition from the New York Trust Co., Judge Charles M. Hough filed an order in the Federal District Cout at New York City recently authorizing Philip A. S. Franklin, receiver for the International Mercantile Marine Co., to pay $5,250,000 for the five ships to be purchased from the Pacific Mail Steamship Co. for the Atlantic Transport Line, which is a subsidiary of the International Mercantile Marine Co. The approximate building cost of the five vessels which are mostly from 11 to 13 years old, was $10,400,000, according to the petition.

MANCHURIA, 13,369 gross tons, was built in 1904 at a cost of $2,600,000. The selling price is $1,500,000, which will bear interest at 5 per cent a year from July 31, 1915. MONGOLIA, 13,639 gross tons, is 11 years old and was built at a cost of $2,600,000. The selling price is $1,500,000, which will bear interest at 5 per cent a year from August, 1915. KOREA, 11,276 gross tons, is 13 years old, and was built for $2,200,000. The selling price is $1,000,000. SIBERIA, 11,284 gross tons, is 13 years old, and was constructed at a cost of $2,200,000. The selling price is $1,000,000. CHINA, 5,060 gross tons, is 26 years old, and cost originally $800,000. The selling price is fixed at $250,000.

The New York Trust Co., which filed the petition asking power to consent to the transaction on the terms mentioned, states that it is holder as trustee of substantially all of the capital stock of the Atlantic Transport Co. of West Virginia, which was pledged to it under a mortgage dated Oct. 1, 1902. The statement is made also that the Transport Line has a large amount of cash on hand which is available for the purchase of the ships. Receiver Philip A. S. Franklin joined with the New York Trust Co. in asking the necessary permission from the Federal court.

The trust company said that, since the beginning of the European war, the International Mercantile Marine Co. and its subsidiary companies have lost three ships and have sold two. To this estimate must be added now the White Star liner ARABIC, sunk off the coast of England by a German submarine.

The petition notes that two of the vessels could be profitably operated between New York and San Francisco by way of the Panama canal, and the others between the United States and Europe on account of present and prospective demands for shipping facilities.

The sale of the Pacific Mail steamers to the Atlantic Line, which was definitely announced in the August issue of *The Marine Review*, follows the statement of the Pacific company that the operation of the La Follette seamen's act would make it impossible to run its vessels profitably in competition with merchant marines under foreign flags.

Transportation of coal from Nova Scotia to Europe in sailing vessels is a departure from the methods in vogue for a long time past, but so great is the demand for steam vessels for war purposes that the sailing craft have again come into their own as a principal dependence of shippers on this side of the water. At every lumber port in the provinces great ships are loading lumber for England.

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In the Traffic Manager's Office

A Review of the Charter Market on Coasts and Lakes—Pointers for the Men Who Get the Business

Exporters Fear a Ship Scarcity

OCEAN shipping rates, which have been showing a downward trend for the past three months, have once again begun to advance. An even larger volume of freight is in sight for the fall and winter months than was offered in the stirring times following the outbreak of war one year ago. Meanwhile tonnage facilities are conceded only slightly, if at all, in excess of the same period in 1914.

The current features in the present ocean freight rate situation, however, differ greatly from those which ruled a year ago. For the whole month of August last year, immediately after the outbreak of the war, steamship facilities were practically disorganized. The uncertainty prevailing as a result of naval operations in many ports of the world, brought about a disarrangement of schedules. There were no standing quotations for ocean freight rates.

With the approaching season the conditions are quite different, although they promise to produce the same results as disorganization brought about a year ago.

Freight Market Factors

The factors which have the most direct bearing on the freight market at the present time may be summarized as follows:

(1) That regular line freight steamers in September, October and November will be carrying larger quantities of ammunition and similar war supplies, to the exclusion of general freight, including grain and foodstuffs.

(2) Heavy coal exports to South America, Italy, Spain and most likely to France, are now furnishing the "controlling rate" for the ocean freight market. This has created a disposition among the ship owners to seek coal charters in place of grain or general freights.

(3) Unless the Dardanelles are soon opened up by the allied naval forces, the American market will have the greatest demand in its history for grain tonnage out of American ports.

(4) Shippers, to protect themselves against a rising market, took under charter during the months of May, June and July, a large volume of steamer tonnage on a time basis. This will result in keeping a considerable number of steamers out of the general freight market for the next six months or possibly a year.

During the months of May and June rates for prompt boats receded, but towards the latter part of July the chartering market took a decided upturn and negotiations were begun for the chartering of steamers to carry new crop grain to Europe. Rates for August, September and October began to reach for higher levels and the tendency now in evidence is regarded by shippers as well as ship owners as being merely a forerunner of developments anticipated later in the year when the grain movement reaches its height. For September boats 11 shillings ($2.70) has been paid. When grain shippers began to anticipate October tonnage requirements, they found ship owners asking 11s 6d ($2.80) for early October and 12 shillings ($2.90) for last half October loading. This is taken as a clear indication that as the year progresses ship owners look forward to a steady rise in rates.

Prospects of Fall Tonnage Scarcity

Aside from the demand for space to carry munitions of war to European ports, one other factor which has produced high freight rates and is expected to do so in a more pronounced manner than ever this fall and winter, is that many of the regular lines last spring chartered numerous steamers for which they paid high rates prevailing at that time, and, therefore, their freight rates must be adjusted on that basis. The Holland-America Line has placed at least a score of additional steamers under charter in the last four months, while the French Line has taken no less than 35 additional steamers.

Despite these so-called additional steamer facilities, the demand for tonnage on transatlantic voyages is now very strong and promises to become more so from day to day, as the fall season approaches. Thus 9 to 10 shillings ($2.20 to $2.40) is being asked for grain to England, provisions paying 60s ($14.50), cottonseed oil 13s ($3.20) per barrel, sack flour 45c to 50c and general cargo on measurement basis 60s ($14.50).

Rates Approach Maximum

These rates are not much below the crest that was established in the spectacular upward movement in the latter part of 1914 and the first three months of the current year, although they do compare with a normal rate of 2 pence (4c) for grain, 15 shillings ($3.65) for provisions, 8 cents for sack flour and 10 shillings ($2.40) for general cargo. On this basis of comparison, with the regular lines despatching many steamers, their earnings may be said to be beyond conjecture.

The Present Level of Rates

The following tabulation shows the prevailing rates from New York on regular line steamers. Incidentally, it may be pointed out that freight agents on the floor of the New York Produce Exchange are booking freely for the fall months and the indications are that berth rates may advance in sympathy with the upward movement of charter rates:

To—	Grain.	Provisions.	Sack flour.	Measurement goods.
Liverpool	10s	60s	45c	60s
Manchester	10s	60s	50c	60s
London	10s	60s	45c	60s
Glasgow	12s	Sept. 60s	50c	...
Bristol	...	60s	45c	50s
Hull	12s	60s	45c	50s
Newcastle	...	70s	50c	60s
Rotterdam	12s	Oct. 90s	50c	40c
Amsterdam	...	91s	51c	41c
Copenhagen	12s	115s	60c	80s
Bordeaux	...	125s	65c	$20
Marseilles	11s	100s	50c	75s
Havre	...	125s	65c	$20
Genoa	12s	100s	65c	80s
Naples	12s	100s	65c	80s

Coal Charters Taking Up Tonnage

One of the most spectacular features in the tonnage market at this time is the demand for coal charters. England's announcement that exports of coal even to the ports of her allies had be prohibited, has brought about an almost sensational extension of our American export coal market.

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Ship brokers are unwilling to estimate the number of steamers which have recently been chartered in the New York market for coal to Italy, to Spain, Greece, Brazil, Argentina and Chili, and to date there is little promise of an abatement in the demand. Indeed, there are apparently well founded reports that England's chief ally in naval operations, namely, France, is soon to close up business for export coal in the American market aggregating several million tons.

While single trip charters to Italy have netted only 36 shillings ($8.75), five and six trip charters have brought as high as 41 shillings ($10). New consumers of American coal are appearing in the market each day.

The latest of these is an inquiry for from 25 to 40 steamers for coal to Alexandria for the Egyptian railways. Sweden and Norway are also apparently in need of coal, contracts having been recently placed in this country calling for about 50,000 tons of coal yet to be shipped out.

Long-Time Charters

It is the opinion in shipping circles that the best indication of the stirring times that may be expected in the freight market this fall is given in the activities of shippers in taking on a large number of steamers on a time charter basis. They say that when shippers take steamers for six months, nine months and even a year, it is well to expect that they have diagnosed conditions carefully and look forward to a continuation of the prevailing high rates. From the fact that the British steamer FRANKFORT has only recently been taken up at 15s 6d for six months in the transatlantic trade and the British steamer EVANDALE fixed for 12 months at 12s, and others taken at similarly high rates, the impression prevails that shippers expect tonnage will be worth more as the year progresses.

Sugar importers in New York, who have vivid impressions of the tonnage shortage last winter, resulting in an advance of 50 per cent in sugar prices, are giving the impression that they feel rates will continue on high levels, and in order to prevent a repetition of conditions have chartered a number of steamers for periods of from nine to 12 months.

A contract for the construction of a 6,000-ton steel steamship for the New York & Cuba Mail Steamship Co., generally known as the Ward Line, was awarded Aug. 10 to the Seattle Construction & Dry Dock Co., Seattle, Wash. The ship will be built in the yards at Seattle.

Minnesota To Quit Run

ALMOST coincident with the recent announcement of the Great Northern Steamship Co., controlled by the Great Northern Railroad, that it would withdraw from transpacific commerce and sell its great freighter MINNESOTA, came the news that the Canadian Pacific railway would also give up its ocean carrying trade. There is no parallel between the two cases, however. For years MINNESOTA and her ill-fated sister, DAKOTA, whose fate on a Japanese reef she herself narrowly missed some months ago, strove to carry on a profitable trade with Oriental ports in the face of Japanese competition, but the effort proved in vain. Of late the big freighter has been plying between Seattle and Vladivostok with supplies for the Siberian railroad of the Russian government. Should she be removed from the Pacific trade routes by her future purchasers, the last of the American merchant marine will disappear with her from Pacific waters, the Pacific Mail Steamship Co. already having announced its determination to dispose of its vessels when the La Follette seaman's law goes into effect.

The Canadian Pacific railway, on the other hand is merely separating its railway and steamship finances and operations, by the organization of a new company, including the Allan line, to be known as the Canadian Pacific Ocean Services and capitalized at $10,000,000. The value of the vessels involved in the transaction is placed at $23,500,000. Despite a falling off in tourist and other traffic, the Canadian Pacific has engaged its main fleet in a profitable carrying trade in the service of the allies. Six of its older steamships were purchased by the British government at a price not made public. EMPRESS OF INDIA, which had served on the Pacific for 25 years, was converted into a hospital ship. Two large, modern steamships, under construction at Belfast, Ireland, have been purchased by the company but have not yet been delivered. The Allan line will continue under the same name.

War Increases Earnings

THE earnings of the International Mercantile Marine Co. for the first six months of 1915, according to a statement recently issued by the reorganization committee, amounted to $11,000,000, an extraordinary increase over the earning of the company in times of peace. The high ocean freight rates prevailing as a result of the war, will enable the company to pay out of earnings for a large amount of new tonnage now under construction. These unprecedented earnings, coming so closely on the heels of the appointment of a receiver afford a striking illustration of the change in the fortunes of some companies, brought about by the war.

Charles E. Haydock, secretary of the reorganization committee, lists the sources of the International Merchantile Marine Co.'s earnings as follows:

First.—From the earnings of the American line, the ships of which line are actually owned and operated by the company.

Second.—From the earnings of the White Star line, the Atlantic Transport line, Ltd.; the Dominion line (English companies), the Red Star line (a Belgian company), and the Atlantic Transport line (an American company), all the stock of which lines is owned by the Mercantile Marine Co.

Third.—From the earnings of the Leyland line, all but a few of the common shares of which company and $2,847,095 (at $4.85 per English pound sterling) of the 5 per cent preferred stock, out of a total of $6,859,598 outstanding, are owned by the Mercantile Marine Co.

Fourth.—From dividends paid by the Holland-American line, one-fourth of the entire capital stock of which company is owned by the White Star and the Atlantic Transport lines.

In the statement of earnings set forth in the reorganization plan, the average annual net earnings of the company for the six years from 1909 to 1914, inclusive, after deducting depreciation at the rate of 5 per cent and all fixed charges except interest on the 4½ per cent bonds and 5 per cent bonds, are stated to have been $2,656,387.

The companies have tonnage under construction and contracted for, which after deducting the amount already paid on account thereof, leaves building obligations of about $15,000,000, which it is expected can be paid for out of accumulating earnings and subscriptions of stockholders under the plan.

Organize Cargo Service

The Parr-McCormick steamship line was recently organized in Portland, Ore., by Fred D. Parr, formerly of the Dodge Steamship Co., E. A. Christenson, S. M. Hauptman and others, for the purpose of cargo transportation between California and Pacific northwest points. The new organization, it is said, will handle all cargo northbound on vessels of the Dodge & McCormick fleet, although its southbound craft will probably continue to transport lumber in the interest of their owners as before. The

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former Great Lakes steamers BINGHAMTON, JOHN G. MCCULLOUGH, OWEGO and GEORGE F. BROWNELL, which have been sold to the Marine Transport Service Co., will be operated between Atlantic and Pacific coast ports via the canal. This company has appointed the Dodge Steamship Co., its agents in Portland and Astoria.

Timothy E. Byrnes, former vice president of the New York, New Haven & Hartford railroad, is organizing a steamship line to ply between Boston and Pacific coast ports via the Panama canal. Mr. Byrnes hopes to raise a working capital of from $10,000,000 to $12,000,000 and to build 11 steamers for weekly sailing service.

Need Ships for Wheat

Scarcity of ocean tonnage and consequent tying up of the Canadian export movement constitutes one of the most serious problems now facing the Canadian authorities, and the difficulties which have arisen will be taken up with the British government. The problem is becoming more important daily, owing to the impending harvest in Canada and the necessity for moving the immense crop which is expected. The general export business of the country has been seriously hampered since the outbreak of the war, on account of the shortage of ocean tonage on the Atlantic as well as on the Pacific.

Practically the whole of the Dominion is vitally interested in the movement of the new crop this autumn. The total wheat yield in Canada last year was 158,000,000 bushels, while this year the estimated crop is over 200,000,000 bushels. This will require a great ship tonnage for export. The elevators of the country have a total capacity of 168,000,000 bushels, which will no doubt take care of the crop so far as storage is concerned. But there is only a capacity of 29,250,000 bushels in the elevators in the eastern inspection division (including Montreal, with a capacity of 7,400,000 bushels), as the large Intercolonial railway elevator at St. John, N. B., was burned last year, so that unless better facilities for export are soon forthcoming, the crop from the west will have to be moved very gradually. In view of this, it is considered probable that there will be serious congestion of wheat at the ocean terminals by the end of September, and in this case the rail movement to the east will be held up. This may bring about an overflow of wheat on the western markets and a consequent big drop in price. This will occur unless the Canadian government succeeds in its present efforts to have some of the ships now on war service released, and every available tramp steamer pressed into service.

The increased insurance rates on account of war risk are comparatively light, compared with the increase in freight rates. If the latter go still higher, joint action, it is said, will be taken by the British imperial and Canadian governments to requisition all available freighters for handling food exports from Canada at a fixed freight rate, the government assuming all risks.

New Chinese Line

Five million dollars, it was stated has been subscribed by a coterie of Chinese merchants in San Francisco and the Orient to finance the steamship line which it was announced recently would be established to ply between San Francisco and China in competition with Japanese lines. Half a million dollars of the fund has been set aside for instant call, said the announcement, which was made on authority of John L. McNab of San Francisco, attorney for the Chinese.

Mr. McNab said a committee appointed to do the preliminary work in organizing the new company is quietly securing options on ships. Most of the work, he said, has been accomplished within the last week by the Chinese merchants, the majority of whom are members of the Chinese Six companies.

The Chinese, McNab said, plan to start with vessels adapted to the peculiar conditions of their Oriental trade—that is, having limited vabin facilities and great steerage and freight capacity. Later they hope to have several first class vessels equipped to handle the best tourist travel in the world.

The original announcement of negotiations looking toward the organization of a Chinese-American steamship company was by Dr. V. K. Wellington Koo, China's first minister to Mexico, upon his arrival at San Francisco on the steamer PERSIA. Dr. Koo withheld the names of the American bankers interested in the project, but said that practically all the great banks of China were back of it.

Dr. Koo intimated that the steamers of the new line would fly the Chinese flag. The service would have been started sooner, he said, had it not been for the difficulty in purchasing vessels. The Chinese minister said of the new venture:

"It is the first fruit of the visit of our industrial commissioners to this country several months ago."

Lake Trade Wakes Up

LAKE trade after dragging along throughout the early summer somewhat leisurely, is now fairly booming. Men are in demand at all ports and are usually shipped as soon as they apply at the shipping offices, affording a decided contrast to the earlier months when they were forced to wait for days and even weeks for an opportunity to ship, owing to a lack of business. The turn came swiftly and leading shippers have sold all the ore that they care to promise to deliver. Other shippers decline to work over time to fill orders. The shippers have again found it difficult to cover their tonnage requirements in the ore trade and all thought of an early close is now abandoned. The indications are that the business will be going at full tilt throughout November, notwithstanding the fact that the seamen's bill becomes operative Nov. 4.

The August movement of ore was certainly surprising and is a pretty good index of what may be expected during the balance of the season. If the proportion keeps up, as it undoubtedly will, the total season's movement will be over 45,000,000 tons. The August movement of 8,081,117 tons was within 123,299 tons of the record movement of July, 1913, when 8,204,416 tons were moved. The double holiday occurring Sept. 5 and 6 halted the movement somewhat, so that September may show a slight falling off, but dispatch is so phenomenal, vessels doing practically no waiting for cargoes, that the decrease will not be much. In fact, the lake fleet is so mobile that it can meet with ridiculous ease any sudden demand upon its resources so that the August movement could readily be exceeded if occasion called for it.

Meanwhile grain shippers are taking time by the forelock and are chartering ahead as far as the wariness of the vessel owner will permit them. Four cents has already been offered for closing trips, which is a very satisfactory figure, but vessel owners may be able to obtain more. Chartering for the last half of September is being negotiated on the basis of 2½ cents, a rate which was reached in November last year. These figures run into money fast and the prospects are that vessel owners will easily recoup the losses of the season of 1914.

Coal is moving quite freely with a firm demand ruling for small boats. Large cargoes, however, are scarce.

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Shanghai's Docks

Dry-docking facilities at Shanghai, declares recent U. S. consular report, appear to be quite ample to accommodate the vessels entering. The Shanghai Dock & Engineering Co. and the New Engineering & Shipbuilding Works, Ltd., in addition to maintaining dry docks are also prepared to undertake any kind of marine construction or repair work. On account of the narrowness of Shanghai's upper harbor and the lack of proper wharfage space, the great majority of vessels calling at that port anchor in the stream at Woosung, about an hour's ride by steam tender from Shanghai.

Tonnage dues are levied every four months. These entitle a steamer to call at any port in China without further payment. The rate for vessels under 150 tons register is about $0.06 gold per ton and for those over 150 tons register about $0.24 gold per ton. Pilotage is not compulsory.

All wharves in Shanghai are privately owned. Vessels carrying Chinese or Japanese cargoes are charged approximately $0.17 gold per foot; vessels under 300 feet, carrying only coal, $36 United States gold; and vessels over 300 feet are charged at the rate of $0.19 per foot. Over-sea steamers with home cargoes are charged $0.19 per foot; lorchas (native-rigged sailing craft), $28.

Overtime Charges

Vessels from foreign ports remaining at wharves for more than five days incur an extra charge of $28 United States gold for the first day and $35 for each succeeding day or part thereof. Coasting vessels remaining at the wharf for more than three days incur an extra charge of $17 for the first and $28 for each succeeding day or part thereof. Vessels wishing to make use of the privately owned head and stern moorings may arrange to do so at a cost of $14 for the first three days or part thereof and $2.75 for each succeeding day or part thereof.

The average stevedoring charges for vessels loading and unloading outside the red buoy at Woosung are about $0.15 per ton. The lighterage charges from Woosung to Shanghai are approximately $0.40 per ton. In addition to these charges are wharfage expenes on cargo landed, depending on the size and weight of packages, which range from $0.03 per package upward.

Shanghai is considered the most important trans-shipping point in the Orient for cargo moving to and from America and Europe, and, during normal times, cargo space has proved sufficient for the needs of this trade. Since the outbreak of the present war importers and exporters have been seriously inconvenienced by the withdrawal of many merchant vessels from service.

Collier Franklin

The collier FRANKLIN, the seventh vessel in the coal-carrying fleet managed by the Coastwise Transportation Co., Boston, was launched recently at the Camden yard of the New York Shipbuilding Co. In addition, the New York Shipbuilding Co. is constructing seven other vessels of the same general type as FRANKLIN, making a fleet of 14 in all, with a total cargo capacity of 94,000 gross tons.

Franklin has been built with machinery amidships and arrangements for discharging her own cargo, which will be delivered at Mediterranean ports; unusually large bunkers have been fitted, to enable the vessel to make the long voyage from Norfolk to the Mediterranean and return without bunkering. In order that the return voyage may be safely made with little or no cargo, ample ballast tanks have been provided in the double bottom and peak tanks. The officers and crew are comfortably berthed amidships and aft. The vessel is 395 feet long, 55 feet broad and 34½ feet deep, and will draw 26½ feet loaded. She is built to take the highest class in Lloyd's Registry and under their special survey. Engines of over 2,000 horsepower will maintain an average speed of 11 knots while she is at sea.

Cotton Brokers Sue

PAPERS are on file in the supreme court of New York county, New York City, in actions brought by the J. H. W. Steele Co., William T. Caswell and the Crawford-Gosho Co., Inc., against L. A. Wight & Co. and E. V. Novelly & Co., for damages aggregating $40,000, alleged to have been sustained by the plaintiffs on account of the failure of the defendants to deliver steamers to load cotton as they had contracted to do.

It is alleged by the Crawford-Gosho Co. that L. A. Wight & Co., insurance brokers, 51 Wall street, New York, acting as their agents, made a contract with E. V. Novelly & Co., 18 Broadway, to deliver a steamer called GEORGIA at Texas City, Texas, on or before Jan. 10, 1915, which was never carried out. It was stated to the plaintiffs by L. A. Wight & Co. that Novelly & Co. had the option of purchasing the steamer from the Hamburg-American Line and were going to change her name to MINKA after the vessel had been transferred from German to American registry.

It is further stated in the complaint that Novelly & Co. were shipbrokers in a small way and never had an option on GEORGIA from the Hamburg-American Line, and that L. A. Wight & Co., as agents for the J. H. Steele Co., should have protected the plaintiffs from being imposed upon in such a manner. Believing it to be true, however, the J. H. W. Steele Co. made contracts for the shipment of 7,000 bales of cotton to Bremen and had to pay a much higher rate to send them on GULFLIGHT after the defendants failed to keep their contract by sending MINKA to Texas City as agreed upon. They claim damages for $16,133.19.

William T. Caswell in his complaint maintains that L. A. Wight & Co. and E. V. M. Novelly & Co. said they were able to deliver the steamer CONSTANTIA, that was to be purchased by Novelly & Co. from the Hamburg-American Line, at the port of Texas City, Texas, in January, 1915. It was also agreed that the name of the steamer should be changed from CONSTANTIA to MARGARET when she was placed under American registry at Washington. The plaintiff alleges that Novelly & Co. did not hold any option for the purchase of CONSTANTIA and was not in a position to deliver the ship as contracted for. Plaintiff had contracted for 7,000 bales of cotton to Bremen and on account of the higher rates he was forced to pay damages to the extent of $10,074.89.

In the third action, the J. H. W. Steele Co. in its complaint alleges that E. V. Novelly & Co. and L. A. Wight & Co. contracted to deliver the steamers CONSTANTIA and GEORGIA at Texas City in January, 1915, or two other suitable American steamers to carry cotton to Bremen, and in consequence they booked to ship 14,000 bales of cotton, for which they had to pay higher rates on another vessel, and were damaged to the extent of $14,751.64. When the case is tried it is expected that Harvey Steele, who is one of the best known cotton men in the southern states, will make some interesting revelations regarding the transactions that took place over the alleged transfer of GEORGIA and CONSTANTIA to American registry.

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Big Self-Unloader Put in Service

W. F. White is Largest Vessel of Her Type on Great Lakes—Unloading Equipment Will Discharge 1,700 Tons an Hour—Description of Conveyors

By R. V. Sawhill

THE designers and builders of ships for service on the Great Lakes have always been noted for the readiness with which they adapt themselves to meet unusual problems. The development of commerce on this country's chain of inland lakes has called for the evolution of a distinct type of carrier. Despite its divergence from the long established and familiar designs of ocean freighters, this type has firmly established its place in the shipping world, through the facility and rapidity with which immense tonnages are handled in a short season of navigation.

These bulk freighters, developed principally for the ore carrying trade, are peculiar to the Great Lakes. Their design was the result of the demand for a boat of large carrying capacity and moderate speed, which would permit the loading and unloading of the cargo with greater rapidity than was possible with the ordinary type. Such freighters were brought out practically simultaneously with the advancement in loading and unloading machinery. These two developments together, have resulted in producing the equipment that can meet a demand for 50,000,000 tons of iron ore in less than eight months.

The insistent demand for quick unloading facilities has extended, in recent years, to other bulk freight carrying trades, notably limestone. Compared with the ore handling trade, the limestone traffic is still young. Its rapid growth during the past few years, rendered the need for quick unloading arrangements imperative. Huge stationary unloaders, of the type familiar at ore docks, are not feasible for several reasons. The traffic is not of sufficient size to warrant the erection of such equipment and in addition, the routes of trade are not so clearly defined. All ore cargoes are unloaded at certain ports on the lower lakes while limestone cargoes may be brought to ports not suitably equipped for discharging the cargo rapidly.

Latest Self-Unloader

To meet this condition, a modification of the bulk freighter which carries self-unloading equipment, was developed and has been in successful operation for several years. The experiments were conducted first on vessels of small capacity, HENNEPIN, for instance, a wooden steamer built in 1888, carrying only 750 tons. The results were so encouraging that several steamers have now been built, which were designed especially for carrying unloading equipment. Each vessel, in turn, was larger than her predecessor. The latest vessel of this class is the steamer W. F. WHITE, launched at the Lorain, O., ship yards of the American Ship Building Co., July 24, and placed in commission Sept. 1. Her capacity is 10,000 tons on a 19-foot draft. The conveyor is designed to unload 1,700 tons an hour. HURON, which previously had ranked as the largest self-unloader on the lakes, has a capacity of 6,500 tons.

The length of W. F. WHITE over all is 550 feet, length on keel, 530 feet, breadth molded, 60 feet, and depth molded, 31 feet. The water bottom is 4 feet deep. Her cost was about $500,000. She was built for the Limestone Transportation Co. and will operate between Rogers City, Mich., and lower lake ports. She was the only large freighter built for the lake trade during 1915, as any contracts placed from now on will call for spring delivery.

She is of all steel construction, and is of the familiar single-decked type. The system of conveyors for unloading was furnished by the Robins Conveying Belt Co., New York. The limestone is transferred by the conveyors to a two-way hopper and thence by elevating pans to the unloading boom.

The new steamer is of arch girder construction, the cargo hold being divided into three separate compart-

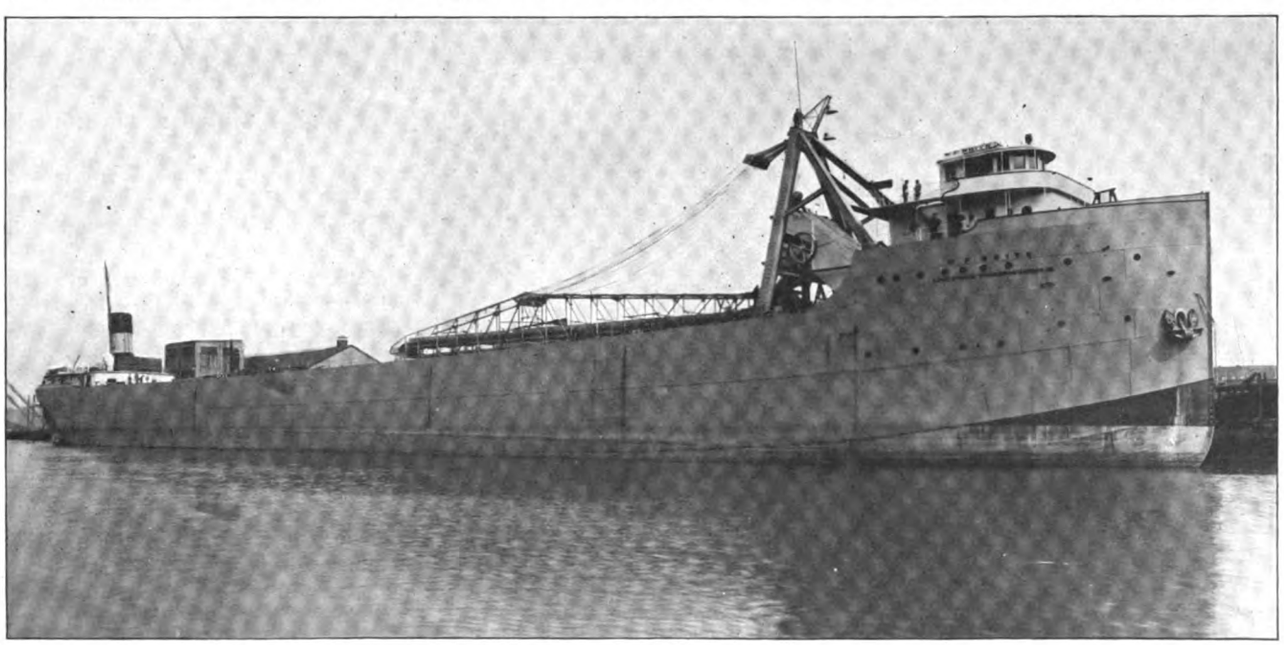

FIG. 1—SELF-UNLOADING STEAMER W. F. WHITE READY FOR MAIDEN VOYAGE

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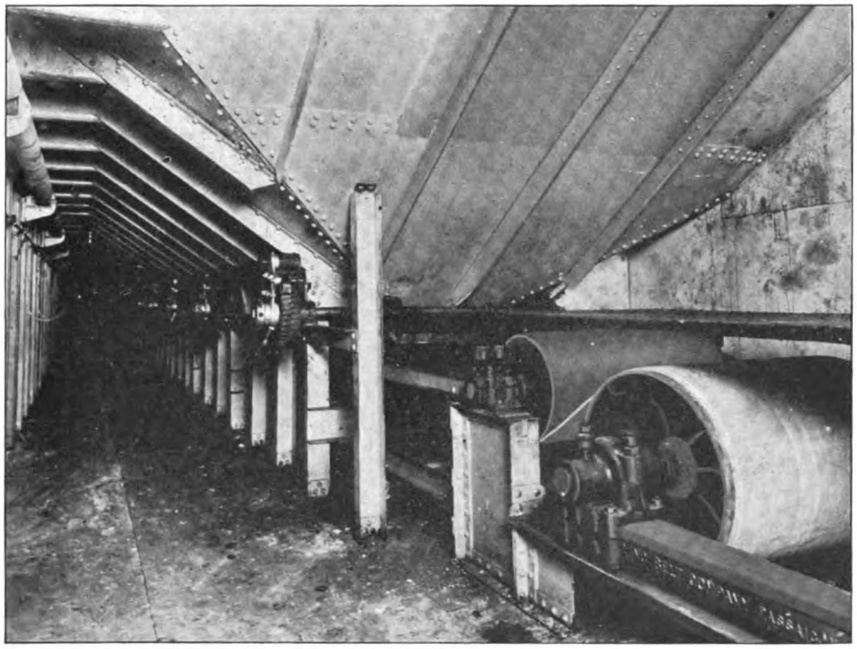

FIG. 2—CONVEYOR, PULLEYS AND MECHANISM FOR OPENING SLIDING GATES

ments. A continuous double hopper extends fore and aft through the cargo space, the cross section of the hopper being in the form of a flattened W with an extreme width of 60 feet. A double bottom, 4 feet deep, is fitted, extending from the engine bulkhead to the collision bulkhead. It is divided by center keelson and watertight bulkheads into ballast and trimming compartments. Suction pipes are fitted into each compartment and are operated from a common manifold located in the engine room. By this arrangement the compartments can be filled or emptied separately or together. From the coal bunker bulkhead to the forward cargo bulkhead, the double bottom extends up to where the slope of the hopper meets the shell and is fitted so that no shelves are left in the cargo hold. The total water ballast capacity is 7,500 tons.

There are 29 hatches, 38 feet wide and 9 feet fore and aft. They are spaced on 12 foot centers. The hatch covers are of the steel telescopic type and are fitted with Mulholland hatch fasteners. The covers are operated by wire cables running through portable tripods on deck and fixed cleats in the gunwale bar, power being supplied by the deck engines. In construction, W. F. WHITE is unusually staunch. All her deck beams run fore and aft and are 12 inches deep, 3½ inches flange and ½-inch thick.

The propelling machinery consists of a triple expansion engine with 25½, 41 and 67-inch cylinders, and 42-inch stroke, developing 1,800 horsepower. The high pressure cylinder is placed forward with the intermediate cylinder adjoining, while the low pressure cylinder is aft. The high pressure cylinder is fitted with piston valves. The low and intermediate pressure cylinders are fitted with double-ported slide valves with relief frames on the back, the weight of the valves being carried by a Lovekin assistant cylinder. The high pressure piston has deep removable followers and the intermediate

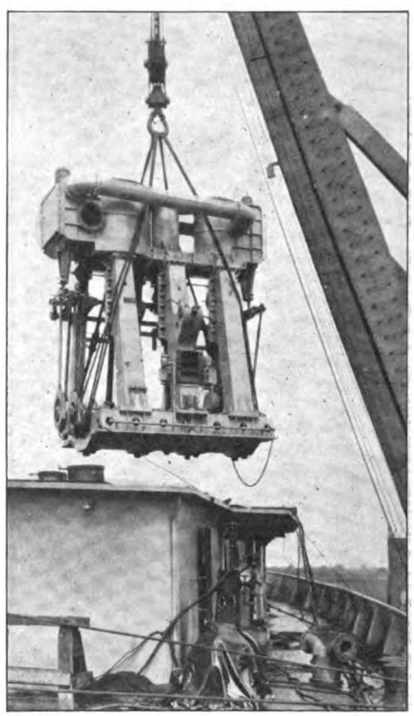

FIG. 4—SHIPPING ENGINE

and low pressure pistons have pring ring packing. All valves are opereted with double bar Stephenson link motion, the low pressure being operated by a single rocker arm. The cylinders are covered with magnesia block and are lagged with planished steel. Metallic packing, furnished by the U. S. Metallic Packing Co., is fitted on the high and intermediate pressure valve stems and on all piston rods. The low pressure valve stem is fitted with soft packing. All valves are of ample area and are readily accessible for quick overhauling.

The engine is carried by three back and four front cast iron columns. The back columns are of box section with water jacketed slides. The slides can be removed without disturbing the crossheads or connections. The crossheads are cast

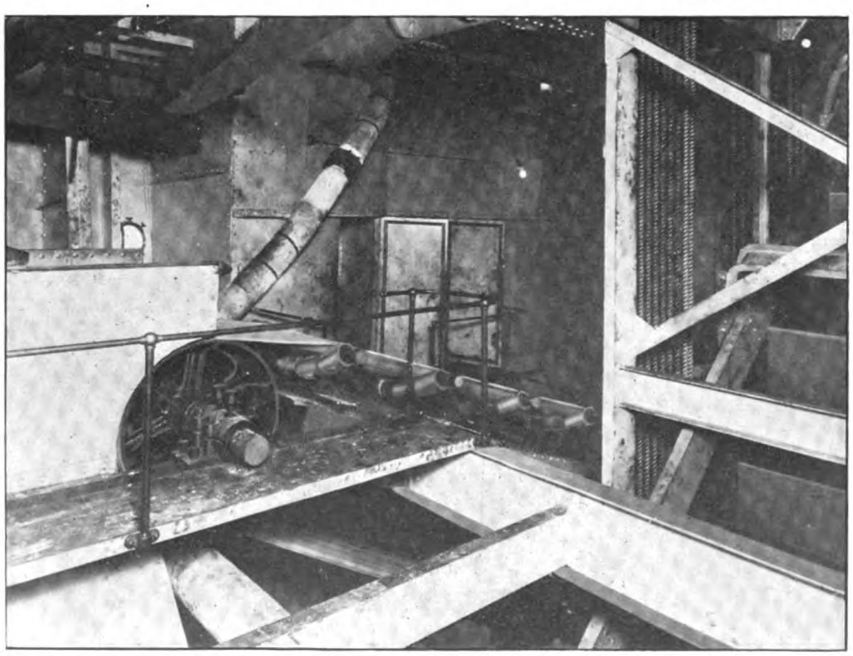

FIG. 3—CONVEYOR IN CENTER, TWO-WAY HOPPER AT LEFT, AND ELEVATING PANS AT EXTREME RIGHT

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steel with slipper adjustment. The bed plate is a cast iron box section of the girder type and has four main bearings containing cast steel boxes which are removable without disturbing the shaft.

The crank shaft is of the built-up type with cast steel cranks. It is 12½ inches in diameter, supported in four babbitted journals, two 18 inches and two 22 inches long. The crank pins are 12¾ inches in diameter and 13½ inches long. The thrust bearing is of the horseshoe type, contains seven collars and is fitted with white metal. It is braced to the bed plate and has seven driving collars giving an average working pressure per square inch of 50 pounds. The outboard shaft is 13 inches in diameter, enlarged in the stern bearing to 13½ inches. The bearing is 4 feet 7 inches long and is lined with lignum vitae. The propeller is of the sectional type, 15 feet in diameter, with a circumferential pitch of 14 feet and a boss pitch of 14 feet. It has a developed area of 90 square feet. The stern bearing which is cast iron, is in four sections lined with lignum vitae, and is readily removable without upshipping the wheel. All connecting rods are wrought iron, tee-ended to crank with cast steel boxes fitted with white metal. The crosshead ends of the rods were forged solid with the eye slotted out and have athwartship wedge adjustment for crosshead boxes. The connecting rod is 9 feet long between centers. The pistons are cast iron, 8 inches deep. The piston rods are steel, and are 5⅜ inches in diameter.

To handle the water ballast three ballast pumps were installed. These include one 14-inch centrifugal pump and two 12 x 16 x 18-inch horizontal duplex pumps furnished by the Warren Steam Pump Co., Warren, Mass. All pumps are connected to the water bottom manifold. They discharge above the load water line and each is provided with one 12-inch and one 14-inch seacock. In No. 1 tank in the center keelson, two sluice valves for shifting the ballast from port to starboard or from starboard to port are provided. In No. 2 tank, one sluice valve is fitted.

The air pump is attached to the main engine and is of the Edwards type. It is operated from the high pressure crosshead. All air pump connections are fitted with adjustable brass boxes. The bilge and cooler pumps are also attached to the main engine. They were furnished by the ship building company. The boiler feed pump is single 14 x 7 x 16 inch, and is provided with chilled cast iron plungers. The pony pump is 12 x 6 x 12-inch duplex. The mate's pump and the sanitary pump are each 6 x 4 x 6 inch,duplex. All these pumps were furnished by the Warren company.

Steam is supplied at 185 pounds pressure by three Scotch boilers, 13½ feet in diameter and 11 feet long. Each boiler has two Morison furnaces of 50 inches inside diameter. The boilers are fitted with the Ellis & Eaves system of induced draft. Flue blowers and boiler purifiers of the Brews type are installed. A vertical feed water heater having a storage capacity of 42,000 pounds is installed. The temperature of the water is raised from 130 to 210 degrees.

The steering gear is in duplicate. The steering engine is the American Ship Building Co.'s direct connected type. It is located on the main deck immediately forward of the rudder, and operates a cut gear quadrant. The wheelstand is located in the pilot house. The wheel stand operating the rudder by hand is fitted aft on top of the deckhouse.

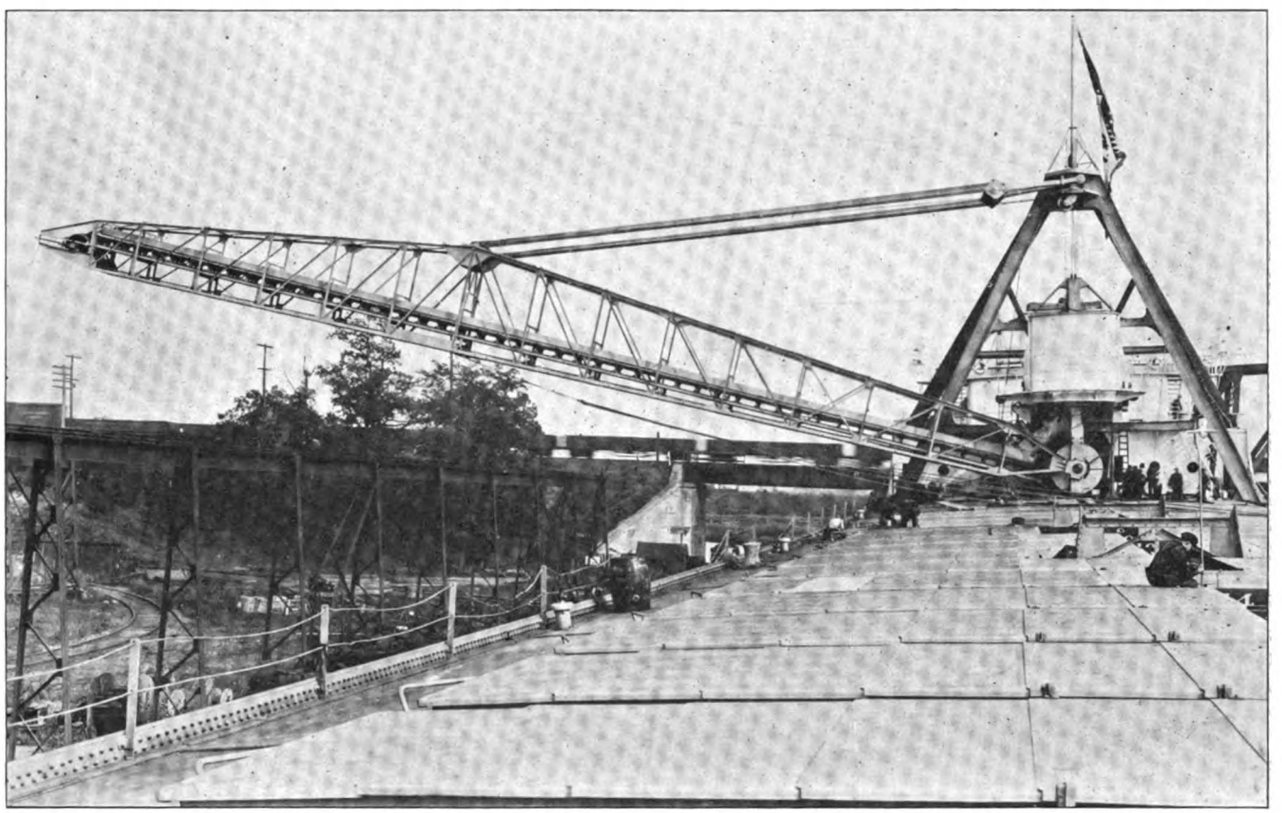

FIG. 5—BOOM IN UNLOADING POSITION

To handle the mooring cables, six single drum mooring engines, 8 x 10-inch cylinders, were furnished and installed by the American Ship Building Co. One is located on the spar deck aft of the after deckhouse; one in the windlass room forward; two forward of the deckhouse and two aft of the forecastle. A 10 x 10-inch spur geared steam windlass also was furnished by the ship building company. It handles the two 8,000-pound anchors.

The electrical equipment consists of two 15 kilowatt direct connected Engberg generators. They generate sufficient light for 2,000, 16-candle incan-

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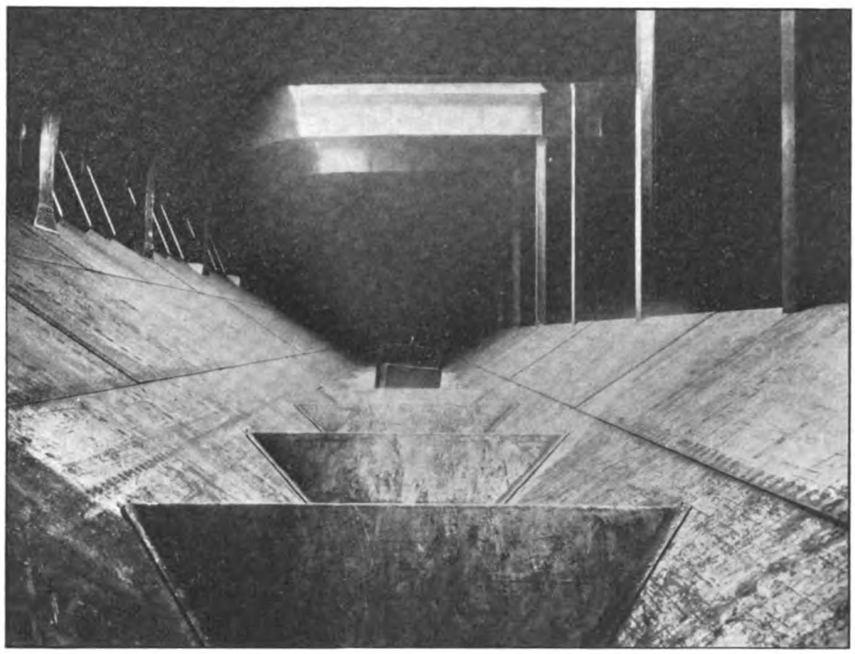

FIG. 6—PORTION OF CARGO HOLD

descent lamps. Separate circuits are provided for different parts of the ship. The deck is lighted by 32-candlepower lamps carried on poles amidships between hatches. The hold is lighted by two 32-candlepower lamps at each hatch. A 15-inch searchlight is provided on top of the pilot house.

Three staterooms are provided for passengers. One is fitted with twin brass beds, while double berths are provided in the others. These cabins are finished in white enamel, the furniture being mahogany. Carpet of a mulberry shade is fastened to the steel deck by means of screws. Quarters for the officers and crew are finished in oak with oak furniture. The private dining room aft is finished in quartered oak. A hospital room is fitted on the main deck aft, W. F. WHITE being the first ship on the Great Lakes to be equipped with facilities for taking care of sick or injured members of the crew. The rooms for the firemen and deck hands are finished in steel throughout.

How Cargo is Unloaded

The arrangement of the cargo hold is shown clearly in Fig. 6. The steep, sloping sides of the hoppers permit the unrestricted movement of the cargo on the conveyor belts. There are 82 slide gates in the bottom of the hoppers, which cover the openings through which the cargo is fed on to the belts. These gates are mounted on ball bearings and are moved by racks and pinions. An adjustable lip is provided on the front of the gate, which is controlled by a lever. The pinion shafts are actuated by ratchet and pawl devices, as shown in Fig. 2. These devices are operated by reciprocating pipes driven by crank and connecting rods from the shaft of the hold conveyor drives. The two hold conveyor belts are 40-inch rubber. They run fore and aft and are arranged one on each side of the center line. These belts deliver the material to a bucket elevator, in which it is elevated from the hold to about 30 feet above the deck and discharged on to the conveyor carried on the pivoted swinging boom, shown in Fig. 5. This boom is 150 feet long and permits the cargo to be discharged at a point 120 feet from the center line of the vessel.

The hold conveyors, boom conveyor and elevator are driven by two vertical, single acting Westinghouse engines of 350 horsepower each. They are equipped with rope drive as shown in Fig. 3. The gate moving mechanism is driven from a shaft which drives the two hold conveyors. The boom lifting mechanism is driven from the driving shaft of the boom conveyor.

The ball bearing sliding gates, are each equipped with individual moving mechanism. The latter, in addition to the racks, pinions, pawls and hand wheels, includes two lengths of pipe which run the length of the hoppers. These pipes operate the ratchet device together with the supporting rollers and pinions, through two driving mechanisms which consist of crossheads, connecting rods, cranks, gears and clutches. This apparatus gives the pipes a reciprocating motion from the shaft which drives the hold conveyors.

The two hold conveyors are 401 feet long. The belts run on troughing idlers, spaced 3 feet apart, return idlers being provided which are spaced 10 feet

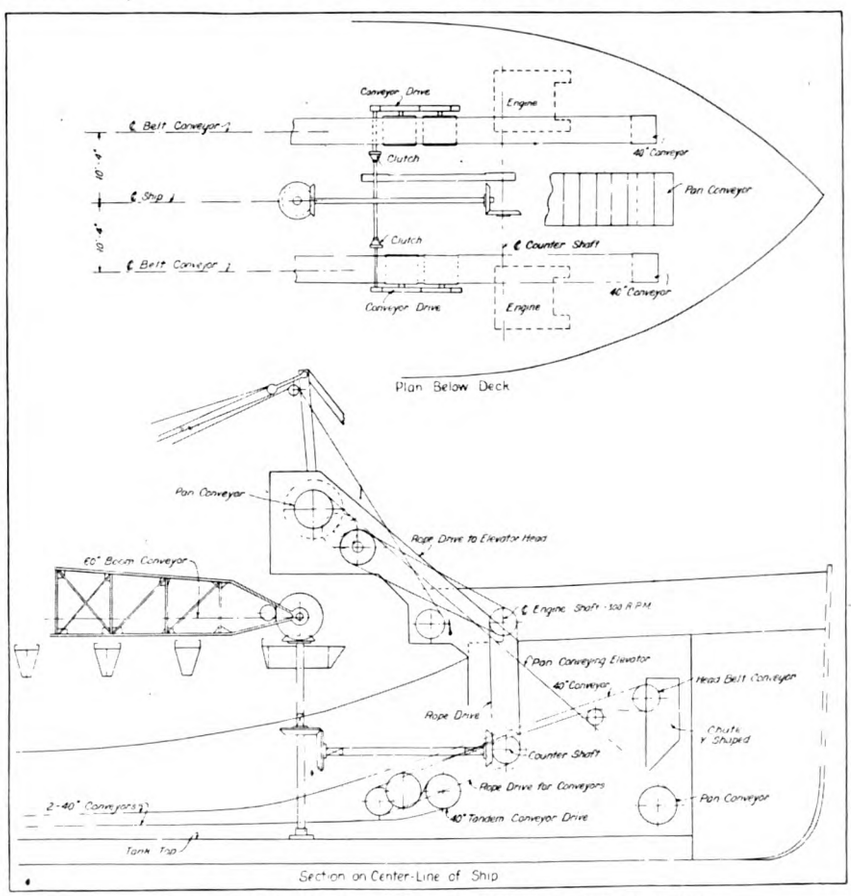

FIG. 7—SKETCH PLAN OF CONVEYING APPARATUS

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apart. Driving power is secured from 72-inch pulleys, 72 inches wide.

The pan elevator which brings the cargo from the hold to the boom conveyor, is 96 inches wide and is arranged on 70 foot 3¾ inch centers. This elevator is shown in Fig. 3. The buckets are 96 inches wide, 30-inch pitch. They are of the overlapping type, 24 inches deep, and are made of $\frac{5}{16}$-inch steel plate, rigidly bound at the corners by angle irons with 1 x 2-inch lip reinforcement. Each bucket has a $\frac{5}{16}$-inch diaphragm with angle stiffeners. The bottoms of the pans are rounded.

Two strands of chain are provided, consisting of 6 x ¾-inch steel side bars, the strands being connected by a $2\frac{1}{8}$-inch rod. The inside bars are bushed with 10-inch chilled rim, enclosed oiling flanged rollers with cast iron outside collars and split pins. The side bars are broached so that turning takes place only between the shaft and bushing and between the bushing and roller. The foot tumblers are cast steel and are provided with shaft, collars and rigid take-ups. The head shaft is equipped with rigid angle boxes, collars and steel equalizing gears to which are bolted the cast steel sprockets. The first countershaft has steel equalizing pinions and cut steel spur gears while the second countershaft has cut steel spur pinion and rope sheaves with friction clutch.

The boom conveyor is 60 inches wide, the pulleys being spaced on 150-foot centers. The arrangement of the troughing and return idlers is similar to that of the hold conveyors. The vertical shaft is provided with a bevel gear at the top, and intermediate bearing, step bearing and bevel gear to the horizontal shaft. The bevel gear of this shaft meshes with the bevel gear on the countershaft under the engine shaft. A rope sheave is provided on the engine shaft for driving the elevator and another sheave on the countershaft for driving the hold conveyors.

The boom is hoisted through a sprocket wheel on the drive shaft of the boom conveyor, a chain connecting this wheel to the sprocket of the countershaft.

Special thought was given in the construction of the vessel and in the installation of the unloading mechanism, to provide adequate safeguards for the crew. All gears are enclosed while ropes and all other exposed operating parts are provided with suitable guards.

When W. F. WHITE steamed out of the Black river at Lorain on Aug. 31, she established another record in addition to those of being the largest self-unloader and the only large bulk freighter built on the Great Lakes this year. Her construction time was the shortest of any boat ever built by the American Ship Building Co., when the weight of material handled is considered. As pointed out in last month's issue of *The Marine Review*, only 126 days intervened between the signing of the contract and the launching. During this period there were 104½ working days. Only 37 days elapsed from the time she was launched until she sailed for Erie, Pa., to take on her first cargo. Only 163 days intervened between the signing of the contract and its completion. The vessel represented 134 working days.

The vessel is named in honor of the vice president of the Limestone Transportation Co. At the banquet, following the launching, Mr. White stated that another vessel of similar type probably would be contracted for within a short time. The boat was built almost entirely from designs furnished by the American Ship Building Co., and according to the rules of the Great Lakes Register. Carl D. Bradley is president of the Transportation company. The limestone which the vessel will carry is owned by the Michigan Limestone & Chemical Co., of which Mr. White is president and Mr. Bradley general manager. A. G. Smith, general manager of the ship building company, had general supervision of her construction. The ship yards at Lorain are in charge of A. C. Payton, general superintendent.

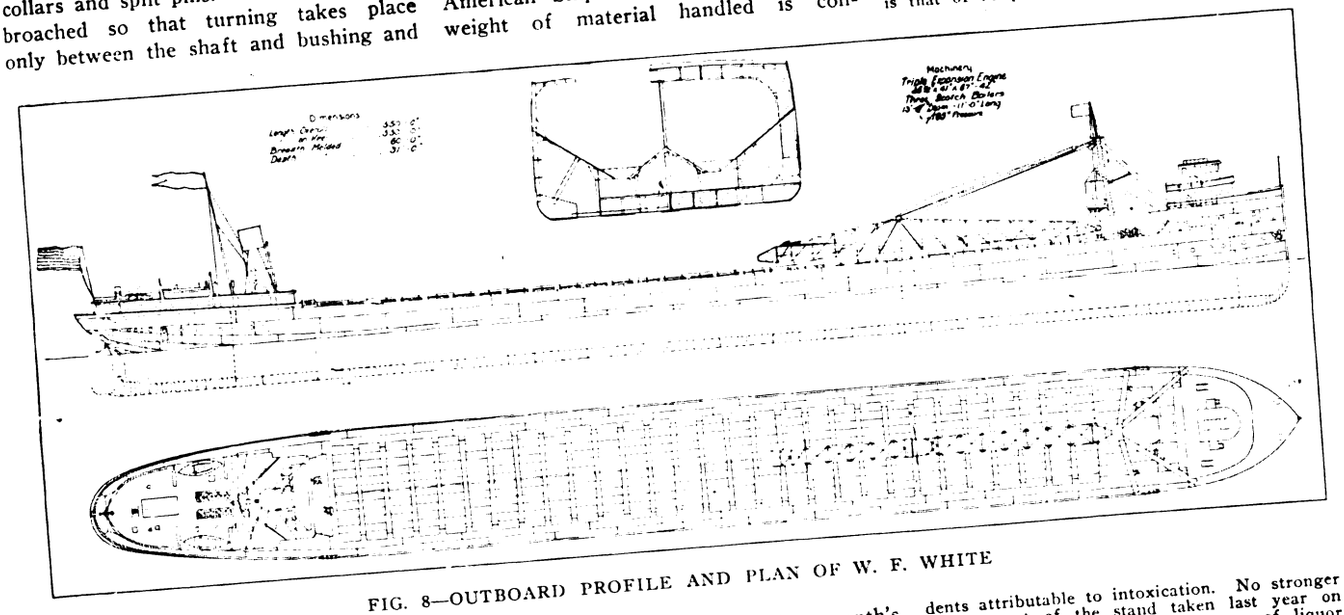

FIG. 8—OUTBOARD PROFILE AND PLAN OF W. F. WHITE

Safety Organization

(*Continued from page* 362)

carelessness, there was an increased lack of care as to the position of the other fellow. This particular feature should be especially dwelt upon by the officers in their instructions to their men, because one careless or reckless employee has time and again spoiled the "safety first" spirit of a whole group of his associates.

"'As to the character of accidents, comparing those which occur more frequently, it is found there is a decrease of 47 per cent in the handling of deck engines, lines, cables and hatch covers, and a decrease of 57 per cent in injuries sustained by falling into the hold, from shelf pieces and between decks.

"'The most startling and gratifying decrease is that of 75 per cent of the number of accidents attributable to intoxication. No stronger endorsement of the stand taken last year on the question of the intemperate use of liquor by the men can be presented. This effort should be continued to the point where no man under the influence of liquor be allowed to board a boat.'"

A record in the expeditious delivery of vessels has been set in the case of the big collier ARCHILLES, built by the Maryland Steel Co., Sparrows Point, Md. ARCHILLES on Tuesday and Wednesday, June 8 and 9, had her acceptance trials under the naval board of inspection. She was turned over to the Panama canal officials at Norfolk on Thursday morning, June 10. In the afternoon the contractors removed their crews and the Panama Railroad Co. had its crew on board by Friday morning. The vessel steamed out of the harbor for Panama on Friday afternoon, June 11, in regular service with a full cargo of 12,500 tons of coal. The vessel was completed two months ahead of time.

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Rulings Modify the Seamen's Act

Application of Law is Limited and Does Not Extend to Vessels Recently Given American Registry—Attorney General Upholds Solicitor

THE department of commerce has made public two opinions on the seamen's law, which tend to limit its application. The opinions were handed down on Sept. 7. The first was an opinion from the attorney general approving the holdings of the solicitor of the department of commerce to the effect that section 14 of the new law, relating to equipment, does not apply to the vessels of foreign nations which have laws "approximating" the laws of the United States. The second was an opinion of the solicitor of the department of commerce, holding that the provisions of the seamen's act do not apply to vessels granted American registry under the emergency ship registry act of August, 1914.

According to the interpretation of the attorney general, section 14 of the seamen's act does not apply to any vessel flying the flag of Great Britain, France, Germany, Japan, Norway, the Netherlands, Denmark, Canada, New South Wales and New Zealand. The law will apply only to the passenger vessels carrying passengers to Italy, Russia, Spain and Greece when using American ports.

Following is the opinion of the attorney general, addressed to the President:

I have the honor to acknowledge the receipt of your letter of June 18, 1915, wherein, in connection with certain accompanying papers submitted by the secretary of commerce, you ask my opinion as to whether foreign cargo or foreign passenger steam vessels leaving ports of the United States are subject to the regulations prescribed by section 14 of the so-called seamen's bill, approved March 4, 1915.

Exceptions Noted

I am of the opinion that when not actually carrying passengers neither foreign cargo nor foreign passenger steam vessels are subject to the provisions of this section. Only foreign private steam vessels carrying passengers from any port of the United States to any other place or country are so subject. To this latter rule, however, an exception must be noted in favor of a vessel belonging to a country whose inspection laws at the time of the voyage approximate our own and which accords to our vessels like privileges of home inspection; provided, such vessel is (1) possessed of an unexpired inspection certificate properly issued under and evidencing compliance with such foreign laws, or (2), where its certificate so issued has expired, it has properly obtained in lieu thereof from the secretary of commerce a special permit to depart from a port of the United States as if possessing an unexpired certificate.

My reasons for this conclusion are as follows:

This Section 14 of the seamen's bill is an additive amendment to Section 4488 of the revised statutes, which itself had been previously amended in respects not material here by the acts of March 2, 1899, 25 Stat. 1012; April 11, 1892, 29 Stat. 16, and March 3, 1905, 33 Stat. 1024. Section 4488 was originally enacted as Section 52 of the act of February 28, 1871, entitled 'An act to provide for the better security of life on board vessels propelled in whole or in part by steam', etc. (16 Stat. 440). Section 41 of the last named act, which became Section 4400 of the Revised Statutes, defined the vessels subject to the operation of the act, and, of course, to the operation of its Section 52, now Section 4488, Revised Statutes. This Section 41 was amended by the acts of Aug. 7, 1892, 22 Stat. 346; March 4, 1895, 25 Stat. 699; February 15, 1902, 32 Stat. 34, and March 17, 1906, 34 Stat. 68, the last amendment being a complete redraft. Section 14 is expressly an amendment of pre-existing law which is to be found in these Sections 4400 and 4488 of the Revised Statutes.

It will be observed that while Section 4488 is directed in terms to "every steamer navigating the ocean, or any lake, bay or sound of the United States" and to every sea-going vessel carrying passengers, Section 4400, which precedes it, restricts its application to "foreign private steam vessels carrying passengers from any port of the United States to any other place or country", provided they be not exempt by reason of the conditions set forth in that section. So the law stood at the time of the passage of the seamen's bill. We are, therefore, confronted solely with the question whether it was the intention of that enactment to enlarge the class of foreign vessels to which the inspection laws should apply.

The clause which we are now considering reads as follows:

Section 14.—That section 4488 of the revised statutes is hereby amended by adding thereto the following: "The powers bestowed by this section upon the board of supervising inspectors in respect of lifeboats, floats, rafts, life preservers, and other life-saving appliances and equipment, and the further requirements herein as to davits, embarkation of passengers in life-boats and rafts, and the manning of life-boats and rafts, and the musters and drills of the crews, on steamers navigating the ocean, or any lake, bay, or sound of the United States, on and after July 1, 1915, shall be subject to the provisions, limitations and minimum requirements of the regulations herein set forth, and all such vessels shall thereafter be required to comply in all respects therewith: Provided, That foreign vessels leaving ports of the United States shall comply with the rules herein prescribed as to life-saving appliances, their equipment, and the manning of the same".

Legislative History

For its interpretation we are entitled to refer not only to the pre-existing law of which it was made a part, but also to its legislative history. United States vs. Bowen, 100 U. S. 508, 513; Myer vs. Car Co., 102 U. S., 1, 11; Doffeback vs. Hawke, 115 U. S. 392, 402; United States vs. Burr, 159, U. S. 78, 85, 86.

The London convention on "safety of life at sea" agreed to on Jan. 20, 1914 (but never ratified by the United States), declared a purpose to secure "safety of life at sea" (Art. 1, ch. 2) and make "merchant vessels * * * mechanically propelled, which carry more than twelve passengers and which proceed from a port domestic to a port foreign, or conversely", subject to its provisions (Art. 2, ch. 2); and obligated the nation to which the ship belonged to accomplish the necessary legislation to make the convention effective.

At the date last mentioned the LaFollette bill S136 was pending in congress. On June 29, 1914, the house committee on merchant marine and fisheries (Rep. 852, 63d Cong. 2d Ses.) recommended an amendment to senate bill No. 136, striking all out after the enacting

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clause and inserting in lieu thereof the so-called Alexander bill (H. R. 4616). This substitute with certain modifications (all of minor importance have the proviso here involved) was passed as the so-called "Seamen's Bill". Section 14 first appeared in this substitute. That part of it which preceeds the proviso remained unchanged until passage. The proviso now in question was added thereto by a later conference amendment.

This section 14 deals entirely with life-saving appliances and methods. As to appliances, it relates chiefly to life boats, of which the report (No. 852) said:

"The life-boat provisions in the committee substitute, as applied to ocean-going vessels of the United States, are substantially those contained in the convention on safety of life at sea, adopted at London Jan. 20, 1914. They are applied in a modified form to United States vessels in ocean voyages on routes not more than 20 miles off shore and on the Great Lakes to meet the conditions in these services".

Of the amendatory proviso: "That foreign vessels leaving ports of the United States shall comply with the rules herein prescribed as to life saving appliances, their equipment and the manning of the same." The conference report said: "While section 4488 of the revised statutes, which is amended by section 14, seems to apply to foreign vessels, as well as vessels of the United States, the proviso was inserted by the conferees to make it clear that it shall so apply".

And the chairman, when the report was under consideration, said: "It was considered necessary, but at the same time perhaps it was not necessary, because I believe under the law that would be so any way. We wanted, however, to make it clear, I think under the statute that would be true." (Vol. 52 pt V Cong. Rec. 63d Cong., 3d Ses., ph 4640, 4733, 4746).

What Foreign Vessels?

I think it clear that the foreign vessels so mentioned in the proviso are such foreign vessels, and no other, as were already subject to the pre-existing law. There are a number of reasons which lead irresistibly to this conclusion.

When we read the proviso with the remainder of Section 14 we are not embarassed by the canon of construction that additional meaning must be given, if possible, to additional language, because the conference committee (the author of the proviso) expressly declared that it was not meant to enlarge the class of foreign vessels which were to be subject to the new regulations prescribed by Section 14, but only to make it clear that such foreign vessels as were already subject to the operation of Section 4488 should remain subject to the new regulations. We thus have from a high source a declaration of the legislative intent.

Simply an Amendment

Again it must be remembered that this Section 14 is not original or independent legislation, but purports to be a mere amendment of a pre-existing section, itself always restricted to a limited class of vessels. In order that the proviso may be given a broader scope than the section amended, the legislative purpose to that effect must be clearly manifest. Thus it is said in Sutherland on statutory construction, second edition, 1904 (P. 444):

The effect of an amendment of a section of the law is not to sever it from its relation to other sections of the law, but to give it operation in its new form as if it had been so drawn originally, treating the whole act as a harmonious entirety, with its several sections and parts mutually acting upon each other. Where a proviso is added to a section by amendment it will be strictly construed unless a contrary intent is clear.

If we read the words 'foreign vessels' in the proviso as meaning "all foreign vessels", this would include foreign men-of-war and foreign sailing vessels, although domestic vessels of both classes are wholly exempt from the operations of the statute. As to war vessels, such a construction would, of course, invite serious questions of constitutional and international law; and it would enlarge the class of vessels subject to the operation of section 4488, contrary to the declared intention of the conference committee.

This limitation of a phrase by its context is a familiar rule in statutory construction. Repeated instances occur in this seamen's bill itself of use of the general words "a vessel", "any vessel", "no vessel", or "the vessel" (sections 5, 9, 13 and 19), where, probably as to all, and necessarily as to some (sections 9 and 19) the words must have a narrower meaning. So the very words "foreign vessels", which appear in section 18 of the act, are by the context in which they there appear, plainly limited to "foreign vessels subject to the operation of this act."

I conclude, therefore, that the words "foreign vessels" in the proviso under discussion can only be read as "foreign vessels subject to the operation of section 4488, of which this proviso is amendatory". This reading meets the declared purpose of the conference committee; accords with the principles of construction applicable to such an amendatory proviso; and makes the amendment harmonize with the large underlying purpose (security of life) of the section on which it was imposed, and also of the act to which that section belongs.

As noted at the outset, certain "foreign private steam vessels carrying passengers" are exempt from the provisions of the act, to wit, those belonging to countries having inspection laws approximating those of the United States and possessing either unexpired certificates of inspection, or in lieu thereof having permits issued by the secretary of commerce. The scope of this exception depends, of course, on the meaning to be given to the word "approximate".

What inspection laws do and what do not "approximate" those of the United States is necessarily a mixed question of law and fact. As such it must primarily be determined for their guidance by the proper officers of that department of the government charged with the administration of these navigation laws. If their determination should be controverted by the vessel owners, the issue is one for judicial determination like any other disputed fact. Speaking generally, the term "approximation" is not synonymous with identity, but indicates merely substantial and material accord. Trivial and unsubstantial differences should be disregarded, as also requirements in the foreign laws additional to and beyond our own. The phrase also contemplates "approximation" not at the date when it was added to the law, to wit, 1902, but approximation from time to time as the inspections and voyages occur.

Questions of Fact

Questions as to the proper issuance of foreign certificates of inspection; as to whether such foreign countries accord to the steam vessels of the United States visiting those countries the same privileges as are offered in the amendment of 1902 to steam vessels of those countries visiting the United States; as to whether vessels claiming the privilege of the secretary of commerce under the amend ment of 1906 are those operating upon regularly established lines, and as to whether such vessels will be regularly inspected by the authorities of their home government before they next return to a port of the United States —all these are of a similar nature and should be similarly resolved.

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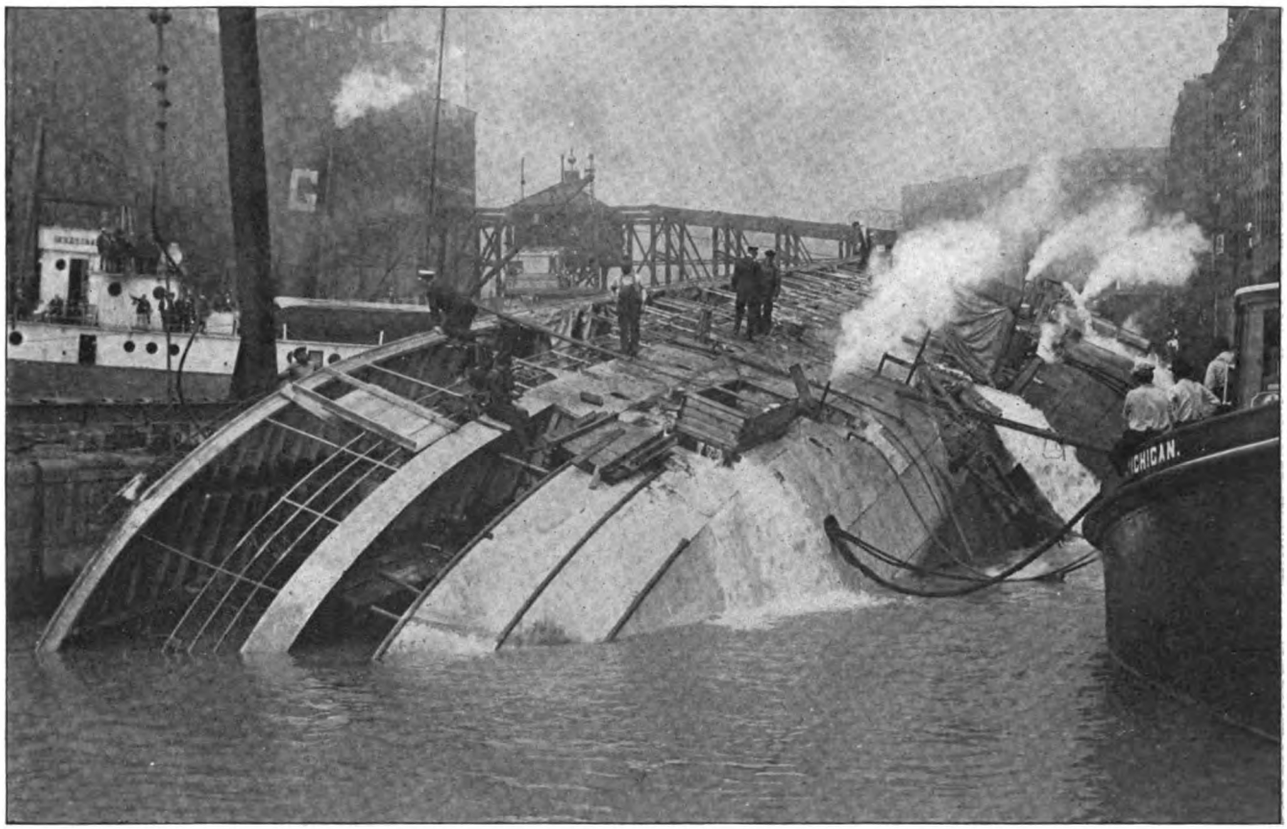

FIG. 1—FIRST STAGE OF THE WRECKING OPERATION SHOWING WATER FLOWING FROM PUMPS IN HULL

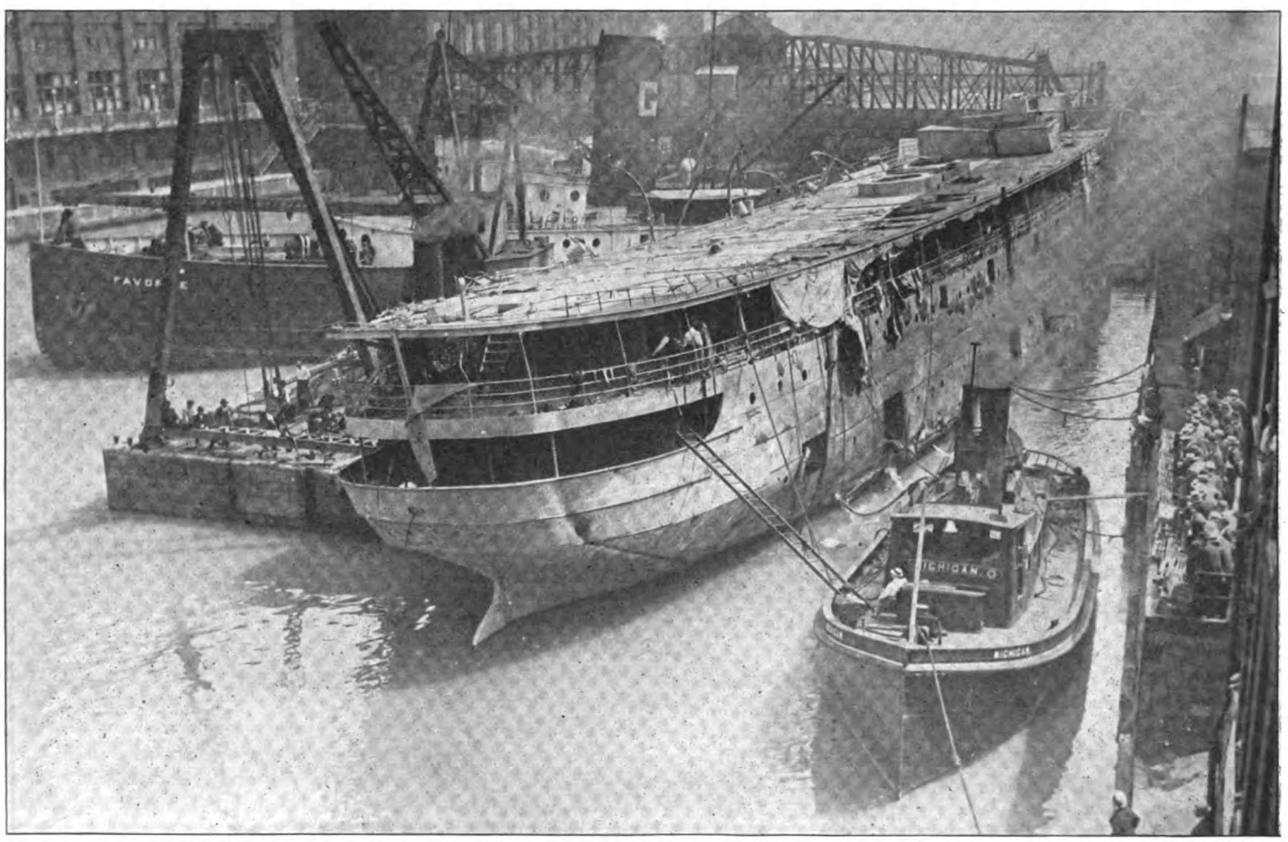

FIG. 2—FINAL STAGE SHOWING LIST DUE TO SHIFTED BUNKER COAL AND DEBRIS

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Righting Eastland a Difficult Task

Description of Salvage Methods—Hull Sealed and Water Pumped Out—Operation a Clean Cut Success

WRECKING operations for the purpose of raising the steamer EASTLAND from its position in the Chicago river where it capsized July 24, causing the loss of 900 lives, as told in the September issue of *The Marine Review*, were completed just three weeks later, August 14. Unusual interest was manifested in this work on account of the various difficulties that presented themselves due largely to the position of the boat and the limited space around it.

The contract for righting the steamer was taken by the Great Lakes Towing Co., Cleveland, and the work was placed in the hands of Captain Alexander Cunning, wreck master; the well known wrecking tug FAVORITE, of St. Ignace, Mich., again proved herself indispensible. Captain Cunning's fitness for the undertaking was enhanced by experience in successfully righting capsized steamers on two former occasions.

Each case of this sort, however, presents its own problems which must be studied individually and the best means applied to obtain the desired result. Previous to his work on EASTLAND, Captain Cunning raised a freight steamer which had capsized in the Detroit river with a cargo of coal and iron and a car ferry that capsized in the harbor at Manistique, Mich. In both of these cases the large amount of room on all sides of the wreck allowed a method of attack which was in a way impossible in the case of EASTLAND. Block and tackle operations, with FAVORITE pulling straightaway and lifting the craft to an even keel, after which it could be pumped out, were possible in the former cases.

The position of the EASTLAND, close to the wharf in the Chicago river, gave no opportunity for working on the keel side. The wharf is an old pile and plank structure and is bordered by old brick buildings fronting West South Water street, neither affording any opportunty for the attachment of tackle. The space between the hull and the wharf was too narrow to be of service.

With these facts presenting themselves to the wreck-master, he decided his entire attack must be from the river side of the capsized craft without aid from any connection by cable to the shore. The Chicago river is narrow at the best and the length of the FAVORITE almost bridged it from EASTLAND to the north shore.

The wreck lay on its side in sufficient depth to submerge more than half its beam, with the upper works somewhat more deeply immersed than the hull, owing to the greater depth of water toward mid-channel. The wreck settled perceptibly after capsizing, sinking into the river mud about two feet at the stern, hiding the starboard propeller and shaft, which were visible above water immediately after the vessel turned over.

Captain Cunning at once ordered from Cleveland a strong steel pontoon rigged with a derrick and while it was on the way he proceeded to seal all the openings in the hull to make it at least partly watertight. After the hull was sealed it was pumped out to give the buoyancy required to lift it from the river bottom. The sealing operation made it necessary to drill and tap holes in the steel plates of the hull and bolt covers of heavy planking in place over all hatches and companionway openings in the steel main deck; it also was necessary to perform the same work on openings cut in the steel hull during rescue work and to make all deadlights secure. Also the smokestacks were cut off at the deck level to allow the closing of these openings. The steel deck was not sufficiently strong to withstand the pressure that would result from making it virtually a side of the hull, while the vessel remained perpendicular, and it was reinforced by a large amount of interior bracing.

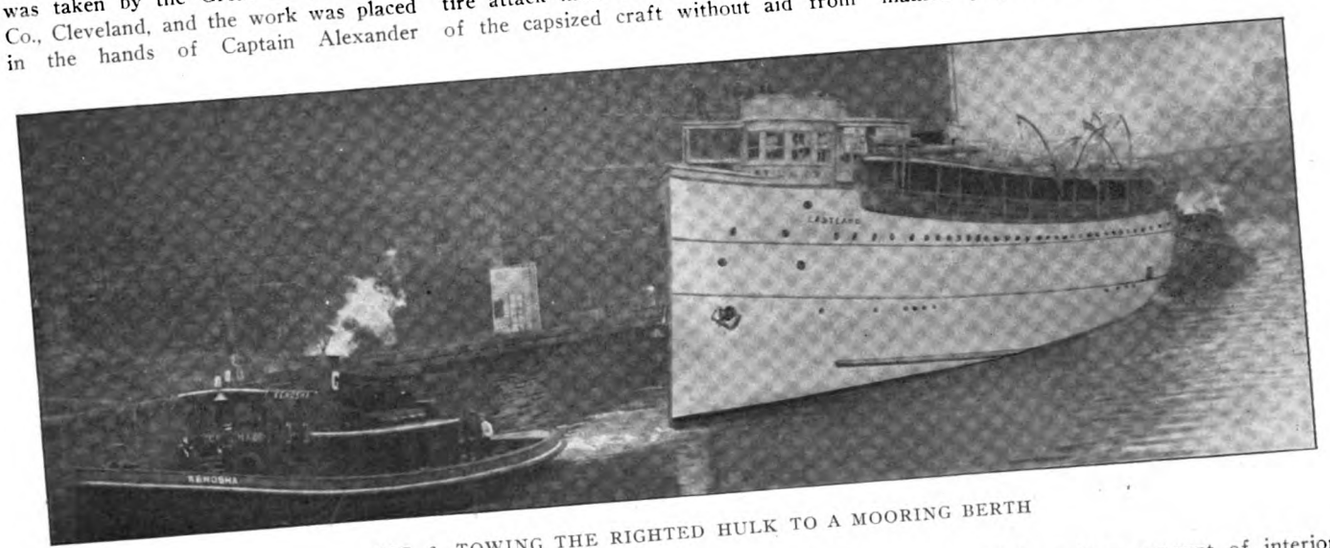

FIG. 3—TOWING THE Rrighted HULK TO A MOORING BERTH

Once sealed, the hull was ready and pumps were rigged on the starboard side, operated by steam from tugs. Meanwhile divers had placed two steel cables, each 2¾ inches in diameter, one at the bow and one at the stern, attached to the starboard chocks on the main deck, passing under the hull on the port side and terminating, in the case of the one at the stern, on the pontoon already referred to, and at the bow, on FAVORITE. The pumping then was started and the steamer responded in a few hours by lifting clear of the mud and rising about two feet. The lightened upper works accounted for most of this gain.

Both the pontoon and the FAVORITE had been depressed by filling their tanks and the cables were drawn snug. Both then began emptying their tanks putting a lifting strain of 300 to 400 tons on

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each of the cables; this had a tendency to lift on the port side and pull downward on the starboard, thus rolling EASTLAND toward an even keel. This operation resulted in restoring the wreck to a position within 20 degrees of upright.

In this position the pumps, which had been emptying the hull, could operate no longer and steam connections were made with EASTLAND'S own pumps, steam from tugs being used, and the hull was further emptied, the wreck righted itself gradually until nearly upright. The shifting of coal and all movable articles to port when EASTLAND capsized gave a permanent list which was corrected by shifting part of this material to starboard, when the ship floated on an even keel.

Numerous delays were met in the task of preparing for the actual righting. Storms on Lake Huron made the progress of the wrecking pontoon slow and the voyage from Cleveland required almost twice as long as had been expected. So many openings in the hull had to be closed and so much bracing was necessary that this work also was slow. Much of the work had to be done by divers below the surface under extremely trying conditions. From the time pumping and lifting were started almost exactly 24 hours elapsed and navigation in the river was closed only 14 hours.

EASTLAND was cleared of mud by the Chicago fireboat GRAEME STEWART and then was towed to the Goose Island shipyard of the American Shipbuilding Co. at Halsted street and the north branch of the Chicago river. The hulk remained in the custody of the federal court under the attachment placed on it by Judge Kenesaw M. Landis and experts under orders of the court made a careful examination to obtain evidence to be used in the inquiry being conducted by the court.

The contract taken by the Great Lakes Towing Co. for wrecking the EASTLAND called for payment of $35,000 when the steamer should be raised. Criticism of the delays encountered was voiced in some quarters on the supposition that the payment was on a per diem basis, but this was groundless and the apparent slowness was due entirely to conditions that it was impossible to avoid. The derricks shown in the illustrations of FAVORITE and the lifting pontoon were not used in the actual lifting operation; they were designed for lighter work and have a capacity of only approximately 35 tons.

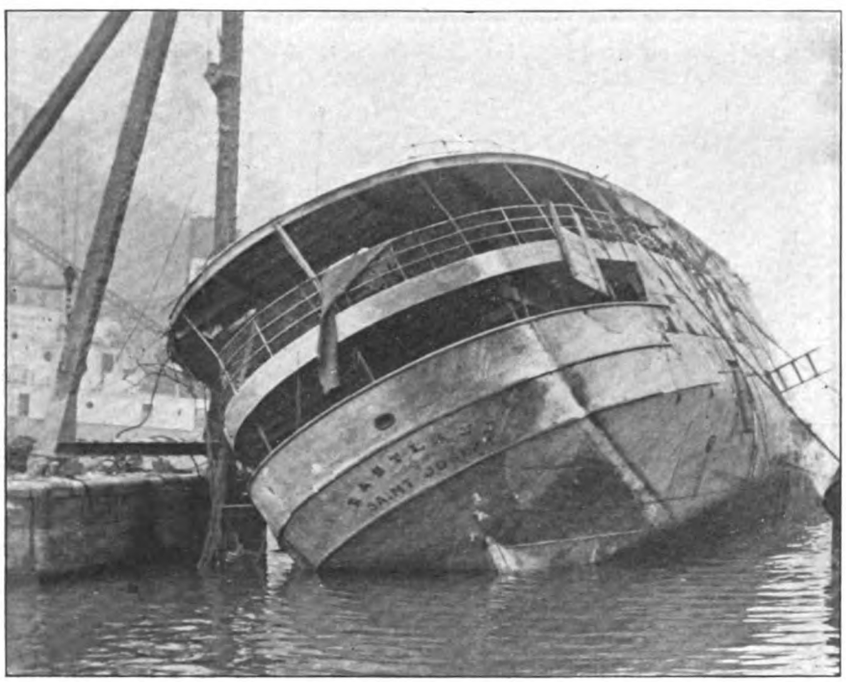

FIG. 4—PONTOON AT WORK ON EASTLAND—SECOND STAGE OF THE RIGHTING OPERATION

New York capitalists, who through Chas. P. M. Jack, a consulting engineer of New York, acquired control of the shipbuilding end of the old Roach shipyard at Chester, Pa., to engage in general vessel construction, now have incorporated the Chester Shipbuilding Co. with a capitalization of $1,500,000. The incorporators are G. F. Jebbett and F. H. Butehorn of New York City, and T. S. Buckingham of Brooklyn. Work now is under way toward the rehabilitation of the yard and it is expected that the company will be in shape to begin ship building within a few months.

Obituary

Captain Horace N. Berry, for 25 years Boston port warden, died recently at West Harwich, Mass. He was 80 years of age, and, because of ill health, resigned his post recently. He was a native of Dennis. In his early life Captain Berry was in charge of various sailing vessels and he had been all around the world. During the Civil war he commanded a transport. He was a member of the Boston Chamber of Commerce and the Boston Marine Society. During the past year, owing to the condition of his health, he had performed little active service.

Captain Berry's survivors are two daughters, Miss Lucretia E. Berry, a teacher in the East Boston high school; Miss Sheba E. Berry, also a teacher in a Boston school; and two sons, Horace Berry, in the beef business in Boston, and Eldridge Berry, who is engaged in the shoe business in Boston.

War Sinks Ships

The statistical summary of vessels totally lost, broken up, condemned, etc., just published by Lloyd *Register of Shipping*, shows that during the year 1914 the gross reduction in the effective mercantile marine of the world amounted to 766 vessels of 1,055,112 tons, excluding all vessels of less than 100 tons. Of this total, 491 vessels, of 870,662 tons, were steamers, and 275, of 184,450 tons, were sailing vessels. These figures, as regards sailing vessels, are practically the same as those for 1913; but as regards steamers, they are nearly 338,000 tons higher than for the previous year. This increase is wholly accounted for by losses due to war operations. During the last five months of 1914 no less than 162 vessels, of 372,277 tons, were sunk by warships or by mines. Excluding such war losses, the tonnage of vessels lost through wreck, breaking up, etc., during 1914, is stated to be 34,195 tons actually lower than that lost during 1913.

Last year brought about great improvements of the harbor and shipping facilities at Singapore. The total cost of harbor works during the year amounted to approximately $1,715,500. It has all been government work and carried out by local contractors. The reclamation project known as the Telok Ayer scheme is approaching completion. This is the up-town section of the improvement work, and provides a north quay 1,600 feet long and a south quay of 2,503 feet. Two basins, one of 560 feet and the other of 1,360 feet, are formed in connection with these quays.

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What the Government is Doing

Rulings on Marine Matters **Improvements to Waterways**

Hints to Navigators

Port Charges Are Fixed at Panama

EFFECTIVE recently the following charges were instituted at the Panama canal for wharfage, storage, lighterage, cranage, stevedoring and transferring cargo, and shifting and towing vessels:

Wharfage

Sailing vessels:	
Not exceeding 100 feet in length over all (per linear foot per day).....	$0.05
When clearing from wharf within five (5) hours from time of berthing, shall pay two-thirds of the regular daily rate with a minimum charge of	1.00
Over 100 feet in length over all (per linear foot, per day).....	.10
Steam or power-driven vessels:	
On "overall" measurements taken from ship's certificate (per linear foot, per day).....	.12½

All auxiliary vessels will be considered power-driven, and charge for wharfage will be made in accordance with their length as specified above. All sailing vessels over 100 feet in length over all, and all steam or power-driven vessels clearing from wharves within five hours from time of berthing, will be charged two-thirds the regular daily rate. When vessels occupy a wharf for more than 24 hours but not over 27 hours, consecutively, the charge shall be 1¼ times the daily rate. "Per day" to mean a period of 24 hours from the time of berthing. However, no wharfage shall be made against steam or power-driven vessels occupying berths solely for the purpose of obtaining coal or other supplies from the Panama Railroad Co. or any department of the Panama canal.

Shifting Berth

Whenever, in the judgment of the receiving and forwarding agent, or Port Captain, it is deemed advisable to shift any vessel not fully engaged in receiving or discharging cargo, in order to accommodate other vessels —or for any other reason—shifting will be made, and the towing and other expenses thereby incurred will be charged against the vessel so shifted.

No charge will be made for the storage of transfer cargo held in cars or on piers up to the departure of the first connecting steamer of the final carrier, provided that such connecting steamer receives such cargo within a period of not more than 35 days from the date same is ready for delivery. On all cargo refused by the first connecting steamer because its entire capacity is filled with cargo that has been loaded at the Panama Railroad Co.'s wharves, storage will be charged per bill-of-lading ton per day at the rate of 3 cents from and including the day of departure of such first connecting steamer up to the time that delivery is accepted by the second connecting steamer of such final carrier. On all cargo refused by the second connecting steamer, storage will be charged per bill-of-lading ton, per day at the rate of 10 cents instead of 3 cents (the minimum charge being for not less than one ton), from and including the day of departure of the second connecting steamer up to the time delivery is accepted by the final carrier.

On all cargo refused by the first connecting steamer because of space being occupied by or reserved for other cargo, or for any reason other than that above indicated, storage will be charged per bill-of-lading ton, per day at the rate of 10 cents from and including the day of departure of the first connecting steamer, up to the time delivery is accepted by the final carrier.

No storage will be charged on cargo for local delivery for a period of 72 hours from the time the ship has completed cargo, but on any cargo not accepted by consignees within that time, a storage charge of 3 cents per 100 pounds per day, or fraction thereof, will be made—the minimum charge to be 15 cents.

Vessels desirous of availing themselves of the Panama Railroad Co.'s cranes at the Balboa piers will be charged 15 cents per bill-of-lading ton on cargo so handled.

Live stock will be transferred and handled by the cranes at the following rates:

Horses, mules and donkeys (per head)..	$2.00
Cattle (per head)	1.50
Sheep, goats and hogs (per head).....	1.00

When the delivering and receiving steamship lines elect to do their own stevedoring, a charge of 60 cents per bill-of-lading ton will be made for transferring such cargo, including mail, baggage and specie (with the exception of explosives), from the cleared slings of the delivering carrier to the slings of the receiving carrier. For handling explosives a transfer charge of $2 per bill-of-lading ton will be made.

In addition to the transfer charge of 60 cents per bill-of-lading ton for handling specie, an additional charge of ⅛ of 1 per cent, based on the value shown on the bill of lading will be made—the additional charge made necessary for its safe-keeping.

When one of the two carriers arranges for the Panama Railroad Co. to stevedore cargo in or out of its steamers, a charge of 90 cents per bill-of-lading ton will be made for the stevedoring from or into the steamer and transferring across dock or docks. When both carriers desire the Panama Railroad Co. to stevedore cargo out of and into their steamer, a charge of $1.10 per bill-of-lading ton will be made for the stevedoring and transferring. The Panama Railroad Co. will exercise the option of transferring cargo either by rail, dock or water.

Carriers Divide Expense

The Panama Railroad Co. will collect from the carrier delivering cargo to its wharves, its charges for transferring and also for stevedoring from the steamer of the delivering carrier and into the steamer of the receiving carrier; leaving these carriers to arrange for the division of the expense between them. In instances where the stevedoring is performed only for one carrier, the Panama Railroad Co. will collect from such carriers its charges for stevedoring.

The Panama Railroad Co. will require early notice from both initial and final carrier of the cargo they desire to have stevedored and transferred at the $1.10 per ton rate, and in the absence of such notice the

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regular rate of 30 cents per ton will be charged for each stevedoring in addition to the transfer charge of 60 cents per ton that is collected from the initial or delivering carrier.

When the receiving carrier desires cargo stevedored into its steamers in such a manner as to permit of its discharge at more than one port, thus requiring more labor in the stevedoring than would be necessary if cargo were loaded for delivery at one port only; or when extra labor is made necessary to shift cargo in the holds in order to secure proper working room, the cost of such extra labor for this special work will be charged against the receiving carrier—plus a surcharge of 15 per cent.

When the receiving carrier does not lift all cargo on hand in its entirety, and calls for certain cargo, necessitating extra labor in its segregation—the cost of such labor will be charged against the receiving carrier—plus a surcharge of 15 per cent. Steamships must furnish power and labor for operating winches, as well as suitable gear and tackle and if, in the judgment of the railroad company, the winchmen furnished by the steamers do not give satisfactory results, it will have the right to substitute competent winchmen at the expense of the steamer.

Cargo for local delivery at Colon and Cristobal will be handled once across the wharves at the rate of 30 cents per bill-of-lading ton, and switched at the rate of $5 per car. Cargo for local delivery at Panama will be charged $1.25 per bill-of-lading ton, including cranage at Balboa. The rates for stevedoring cover only general cargo, and charges for special commodities will be made as follows:

Boilers, locomotive parts, machinery, railroad cars, etc., scrap machinery and scrap boilers, etc., or other heavy weights over two tons (per bill-of-lading ton)	$0.50
Structural iron over 35 feet long (per bill-of-lading ton)	.50
Loose brick, conduit, sewer pipe, terra cotta and tiling (per bill-of-lading ton)	.50
Loose scrap iron of irregular shape, pieces not over two tons (per bill-of-lading ton)	.60
Lumber, switch and cross ties (per M. ft. B. M.)	.50
Rough timber and logs (per ton)	.40
Piling (per linear foot)	.00¾
Horses, mules and donkeys (per head)	1.00
Cattle (per head)	.75
Calves, goats, dogs, hogs and sheep (per head)	.50
Live stock other than above indicated, when crated (per ton)	1.00
Mail, baggage and specie (per ton)	1.00
Explosives (per bill-of-lading ton)	1.00

The above-mentioned rates for stevedoring apply to only such cargo as can be handled by ship's gear. Any additional appliances, machinery, wrecking cranes, etc., to be supplied by the Isthmus will be paid for by the delivering carrier in the case of cargo discharged and by the receiving carrier in the case of cargo delivered.

Rates for towing follow:

For harbor work, shifting berth, work around piers or locks, and short tows in Gaillard Cut and elsewhere, per hour or fraction thereof	$15.00

Fractions of an hour beyond the first hour to be charged for on basis of 15-minute periods. Charge to begin when tug leaves permanent berth and to continue until her return to same.

For towage through the canal:

Per net Panama canal ton	$.10
Per displacement ton	.04
Minimum charge for towage through the canal	150.00

When no berth is available and call is made on the Panama railroad for lighters, and it is possible to furnish same, they will be furnished free, the usual charge for labor, stevedoring, and transferring cargo to apply; but when lighters are furnished to a ship in quarantine, or by a ship on berth solely to expedite the discharge and loading of a ship with no corresponding benefit to the Panama railroad, a rental of 50 cents per hour for their use will be made, in addition to the usual charge for stevedoring and transferring, all towage to be borne by the steamship company. When a steamship line furnishes its own lighters, labor, towage, etc., then the right of basin charge will be assessed at the rate of 40 cents per bill-of-lading ton.

An Official Explanation

SINCE the EASTLAND disaster a great deal of conflicting and unreliable information has been published regarding the scope of the work of the steamboat inspection service in examining and passing upon the construction of steamships. The service has been severely censured in certain quarters for failure to condemn EASTLAND on account of her instability, but, as pointed out in the September issue of *The Marine Review*, the inspectors went as far as the law permitted them to go. There is nothing to indicate their examination of EASTLAND was in any way faulty under the law. The law, as it stands at present, does not give the inspectors power to examine the stability of passenger steamships. On this point *The Marine Review* has received an official communication from George Uhler, supervising inspector general, the contents of which are as follows:

"You are informed that under the provisions of Section 4417 R.S., the local inspectors shall, once in every year, at least, carefully inspect the hull of each steam vessel within their respective districts, and shall satisfy themselves that such vessels so submitted to their inspection are of a structure suitable for the service in which they are to be employed, etc.

"Under the provisions of this statute the local inspectors have ample authority to refuse to certificate a vessel that they do not believe is of a structure suitable for the service in which she is to be employed, and they also would have authority to condemn a vessel that was not of proper structure. At the same time, however, there are no detailed rules or tests laid down by which local inspectors shall ascertain whether a vessel is of structure suitable for the service in which she is to be employed, the bureau not having authority to lay down such detailed rules in regard to hull construction. It may be further stated that the steamboat inspection service has neither the money nor the force of inspectors sufficient to approve and follow-up hull construction. This is a matter that has had the consideration of this bureau, and as it may be of interest to you, you will find enclosed herewith a copy of the annual report of the supervising inspector general for the fiscal year ended June 30, 1914, your attention being particularly invited to the marked portion on page 16 thereof."

The quotation referred to in Gen. Uhler's letter is as follows:

"It is believed, instead, that there should be stationed in the office of the supervising inspector general a corps of experts whose business it would be to approve the proposed hull construction. This, it is thought, is necessary (1) because it would enable the department to employ experts who are more familiar with hull construction than the local inspectors, and (2) it would result in that uniform administration of the law with which the supervising inspector general is charged."

A Significant Paragraph

Another significant paragraph from the same report is as follows:

"At a meeting of the board of supervising inspectors in January, 1911, there was promulgated a rule requiring the owner of every new vessel of over 100 gross tons, when making application for the first inspection of the vessel, to furnish the local inspectors of the district where the vessel is to be inspected a drawing, or blue print, in plan and section, showing fully the general construction of the vessel—whether of wood, iron, or steel—including dimensions; spacing of frames; disposition of hull plates, outside and in, or of outside and inside planks; construction of decks, construction of transverse and longitudinal bulkheads and location of same; space between decks; details of principal scarfs; a statement of the shapes, dimensions and unit weights of all structural

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parts of the hull; and of the kinds of material of which made, including kinds of wood. This rule also required a full description of the riveting of all parts of an iron or steel hull. One result of the rule referred to has been to place in the possession of local inspectors certain valuable information of which they were formerly in ignorance. To this extent, therefore, the Service makes an effort to see that the vessels subject to its inspection are properly constructed, but the rule as it stands at present does not require the blue prints to be approved by the inspectors having jurisdiction; it simply requires that information be furnished to the inspectors of that district."

Circulars Issued

The department of commerce has issued a circular calling attention to the following clause in the seamen's act:

"That the owner, agent or master of every barge which, while in tow through the open sea, has sustained or caused any accident, shall be subject in all respects to the provisions of sections 10, 11, 12 and 13 of chapter 344 of the Statutes at Large, approved June 20, 1874, and the reports therein prescribed shall be transmitted by collectors of customs to the secretary of commerce, who shall transmit annually to congress a summary of such reports during the previous fiscal year, together with a brief statement of the action of the department in respect to such accidents."

In administering this clause, the department has issued the following regulations:

"For the purpose of administering this act 'barges while in tow through the open sea' shall be such barges while outside the lines dividing the high seas from rivers, harbors and inland waters, as defined by the secretary of commerce pursuant to section 2 of the act of Feb. 19, 1895. All accidents sustained or caused by any barge while in tow outside these lines will be reported by the owner, agent or master to the collector of customs and by that officer to the secretary of commerce pursuant to section 15 of the act quoted.

"All such accidents inside such lines shall be reported as at present under the act of June 20, 1874."

The department of commerce has issued the following regulations regarding the hours of labor clause in the seamen's act:

"The section prescribes no penalty on the master or owner for failure to comply with its provisions. Collectors of customs will distribute this circular promptly to the masters of such merchant vessels of the United States as are covered by the section, requesting them after Nov. 4 to post it in forecastles. Local inspectors of steam vessels will bear the section in mind in fixing the complement of officers and crew in the inspection certificate, pursuant to section 4463, Revised Statutes, as amended by the act of March 3, 1913. Where charges in outstanding certificates of inspection may be necessary, they may be made by indorsement. Shipping commissioners on and after Nov. 4, 1915, until otherwise instructed, will furnish two copies of this circular to the master of every vessel of more than 100 tons gross, the crew of which is shipped before them, with the request that one copy be posted in such part of the vessel as to be accessible to the crew. Complaint by a seaman that the master has failed to comply with this section may be made to the United States shipping commissioner, or, in a foreign port, to the American consul, if the crew has been shipped on the United States shipping articles. The shipping commissioner or consul will hear such complaints and render his decision in the manner now prescribed for hearing and deciding complaints."

August Lake Levels

The United States Lake Survey reports the stages of the Great Lakes for the month of August, 1915, as follows:

Lakes.	Feet above mean sea level.
Superior	602.41
Michigan-Huron	580.11
Erie	572.34
Ontario	245.43

Lake Superior is 0.12 foot higher than last month, 0.34 foot lower than a year ago, 0.23 foot below the average stage of August of the last ten years, 1.52 feet below the high stage of August, 1876, and 0.81 foot above the low stage of August, 1879. Average stages of the last ten years indicate that the September level will be 0.1 foot higher.

Lakes Michigan-Huron are 0.19 foot higher than last month, 0.52 foot lower than a year ago, 0.87 foot below the average stage of August of the last ten years, 3.40 feet below the high stage of August, 1876, and 0.25 foot above the low stage of August, 1911. Average stages of the last ten years indicate that the September level will be 0.2 foot lower.

Lake Erie is 0.26 foot higher than last month, 0.22 foot lower than a year ago, 0.32 foot below the average stage of August of the last ten years, 1.77 feet below the high stage of August, 1876, and 0.96 foot above the low stage of August, 1895. Average stages of the last ten years indicate that the September level will be 0.3 foot lower.

Lake Ontario is 0.30 foot higher than last month, 0.90 foot lower than a year ago, 1.21 feet below the average stage of August of the last ten years, 2.83 feet below the high stage of August, 1862, and 1.08 feet above the low stage of August, 1895.

Language Clause Interpreted

Within the past month a number of reports have been circulated regarding the interpretation of the language clause of the seamen's act. In order to obtain an official ruling on this important matter, for publication, *The Marine Review* addressed a letter of inquiry to the department of commerce, asking for an opinion. The department's reply, signed by Edwin F. Sweet, acting secretary, is as follows:

"The following interpretation has been placed by this department upon the clause in the seamen's act to which you refer:

"'The department construes the words "able to understand any order given by the officers of such vessel" to mean the necessary orders that may be given to members of the crew in each department in the course of the performance of their duties.'

"Permit me to call attention to the fact that the 75 per cent language clause of the seamen's act does not make any mention whatever of the ability of the members of the crew to *speak* in any language. All that is required is that the vessel shall have on board 'a crew not less than 75 per cent of which, in each department thereof, are able to *understand* any order given by the officers of such vessel'.

"Congress was evidently looking for practical results. It is for the officers to command and for the crew to understand and obey the commands given by the officers. The commands on board a ship have no reference to abstruse or academic subjects but are comparatively simple and few in each department. It should not be a matter of great difficulty for members of the crew to acquire enough knowledge of the languages used by the officers to understand all orders naturally pertaining to their several duties. To require more than this would not make for better work or greater safety. For my own part, I am unable to see why there should be any reduction of our merchant marine because of this requirement."

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Census of Seamen

A census of the able seamen in the United States is to be taken by the department of commerce under authority of the La Follette seamen's act. Acting Secretary of Commerce Thurman has addressed a letter to all the collectors of customs requesting them to collect the necessary data and forward it to the bureau of navigation.

Beginning Nov. 4, no vessel of 100 gross tons and upward will be permitted to depart from a port of the United States unless 40 per cent of its deck crew, exclusive of officers, etc., are rated as able seamen. An able seaman is defined as any one who is 19 years of age or older and who has had three years' service on deck at sea. Able seament will also be required to pass an examination as to eyesight, hearing and physical condition.

The department's letter to the collectors is as follows:

"Your attention is called to the following provisions of section 13 of the seamen's act of March 4, 1915, which will take effect on and after Nov. 4, 1915:

"'Sec. 13. No vessel of 100 tons gross and upward, except those navigating rivers exclusively and the smaller inland lakes, and except as provided in section one of this act (fishing or whaling vessels or yachts), shall be permitted to depart from any port of the United States unless she has on board a crew not less than * * * 40 per cent in the first year * * * of her deck crew, exclusive of licensed officers and apprentices, are of a rating not less than able seamen.

Able Seamen Defined

"'Every person shall be rated an able seaman and qualified for service as such on the seas, who is 19 years of age or upward, and has had at least three years' service on deck at sea or on the Great Lakes, on a vessel or vessels to which this section applies, including decked fishing vessels, naval vessels or coast guard vessels. * * * Provided that upon examination, under rules prescribed by the department of commerce as to eyesight, hearing and physical condition, such persons * * * are found to be competent.'

"1.—The department wishes as soon as practicable a list of the vessels in your district which will be subject to the section, together with the number of the deck crew of each, so that it can arrange for the examination as to eyesight, hearing and physical condition of able seamen, and for the issue of certificates to such, and may determine approximately the number of such examinations and certificates required for the several seaports of your district.

"2. You will, therefore, please prepare and send to the bureau of navigation as soon as practicable, lists giving the names of vessels in your district of 100 gross tons and upward, except those navigating rivers exclusively and the smaller inland lakes and except fishing or whaling vessels or yachts, together with the total deck crew of each, and the port whence the vessel is employed. These lists will be prepared separately and forwarded each as soon as finished as follows:

"(a) Steam vessels. (The number of the deck crew may be ascertained from the outstanding certificates of inspection filed with you, i. e., total of quartermasters, seamen and deck hands).

"(b) Square rigged vessels.

"(c) Schooners, etc.

"(d) Barges.

"(e) Motor boats, if any, over 100 tons, subject to the section.

"3. In lists (b), (c), (d), (e), where vessels are not subject to inspection by the steamboat inspectors, please state separately the number of mates.

"4. Apprentices are so rarely carried on American ships, except those under the ocean mail act of 1891, that they need not be separately stated in the return now asked for, except in the case of such contract mail steamers."

Soo Commerce

The August movement of freight through the canals at Sault Ste. Marie was the heaviest of the year, totaling 10,540,781 tons as against 9,719,237 for July. The movement to Sept. 1 of the present year was 37,404,152, while in 1914 the movement to Sept. 1 amounted to 34,615,959 tons. Of the August, 1915, movement of 10,540,781 tons, 748,810 tons passed through the Canadian canal and 9,791,971 through the American canal. Following is the summary:

	To Sept. 1, 1914.	To Sept. 1, 1915.
EAST BOUND		
Copper, net tons.....	40,278	79,254
Grain, oth. than wheat, bushels	32,355,517	19,050,451
Bldg. stone, net tons..	.....	.....
Flour, barrels	5,144,212	3,878,605
Iron ore, net tons.....	20,633,194	25,962,787
Pig iron, net tons.....	11,575	2,550
Lumber, M. ft. B. M..	288,283	289,348
Wheat, bushels	59,976,153	41,064,758
Unclass. frt., net tons.	169,863	172,829
Passengers, number ..	24,499	21,725
WEST BOUND.		
Coal, anthracite, net tons.	1,426,591	1,274,174
Coal, bituminous, net tons	7,990,621	6,552,627
Flour, barrels	517	100
Grain, bushels	.....	31,250
Mfctd. iron, net tons..	162,332	115,810
Iron ore, net tons.....	.....	.....
Salt, barrels	496,108	393,853
Unclass. frt., net tons.	662,227	680,106
Passengers, number ..	27,225	21,294
SUMMARY OF TOTAL MOVEMENT		
East bound, net tons..	24,300,139	28,721,967
West bound, net tons.	10,315,820	8,682,185
	34,615,959	37,404,152
Vessel passages	11,860	11,766
Registered tonnage ...	26,598,745	29,803,389

Improve Baltimore Yard

EXTENSIVE improvements are now in progress at the yards of the Baltimore Dry Docks & Ship Building Co., Locust Point, Baltimore, Md. Two ship building slips, each capable of constructing a vessel 325 feet long, 50 feet beam and 32 feet depth, are being built on the harbor front. These slips are parallel, with sufficient space between them for an overhead crane which will serve both. All of the submerged portions of the slips will consist of timber piles, the sections above water on their lower extremities being reinforced concrete. The upper ends are being constructed of timber, which will be replaced with concrete. A 20-ton revolving overhead electric crane, operating between the slips, will have a boom 65 feet in length, which will move 40 feet above the slips on a runway 340 feet long. The contract for the crane and runway has been awarded to the American Bridge Co., New York, at about $25,000.

At the rear of the slips, a ship-fitting shop is to be erected, connecting with the crane runway by a standard gage track which will run through the present repair shop, connecting at its other end with a spur from the Baltimore & Ohio railroad. This ship-fitting shop will be 220 feet long and 60 feet wide, and will be constructed of steel. The contract for its erection was awarded to the Chesapeake Iron Works, Baltimore. The Hilles & Jones Co., Wilmington, Del., secured the contract for the tool equipment, at about $25,000. A 5-ton overhead electric crane will be supplied by the Northern Engineering Co., Detroit.

Miscellaneous Improvements

Miscellaneous repairs to the equipment of the yard, recently made, amount to $40,000, and $60,000 is to be invested in additional repairs in the near future. The timber work in one of the dry dry docks is being replaced with reinforced concrete. This dock will be provided with a slip for constructing small craft up to 150 feet in length. The slip is to be so situated that launchings may be made directly into the dock. This arrangement was necessary on account of the restricted water front. The slip will be served by a 5-ton crane equipped with a 50-foot boom.

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New Ferry Boat for Pacific Service

Santa Clara, Which Operates on San Francisco Bay, Represents Latest Design by Southern Pacific Railroad of This Type of Vessel

By A. A. Willoughby

ON JULY 20 the Southern Pacific Railroad Co. placed a new ferry of the side paddle wheel type in service. She is named SANTA CLARA and is a sister boat to ALAMEDA, which was launched last year. The new ferry is designed to accommodate the constantly increasing interurban service between San Francisco and the east bay territory. The exposition traffic has been heavy and the Southern Pacific now has eight ferry boats in service from the San Francisco ferry depot, as follows: Three to Oakland Pier; three to Oakland harbor, and two to Alameda Pier. Another ferry runs from Vallejo Junction to Vallejo, and three boats are held in reserve. SANTA CLARA and ALAMEDA are on the Oakland Pier run and cover the 3½ miles in approximately 15 minutes.

Between 700 and 800 electric trains are operated daily in and out of Oakland Pier in connection with the ferry service, giving a 20 minute schedule to all parts of the bay territory. The population of the bay cities dependent on this service is in the neighborhood of 150,000 and upwards of 15,000,000 passengers are carried each year by the ferries. The Ogden, Shasta and Valley routes of the Southern Pacific also discharge their passengers at Oakland Pier to be ferried to San Francisco. SANTA CLARA has an all-steel hull and embodies some unusual safety features. Her dimensions are as follows:

Length over all, feet	293
Length between perpendiculars, feet	273
Width over guards, feet	76
Molded beam, feet	42
Molded depth, feet	17
Light draught, feet	8
Light displacement, tons	1,550

The hull was fabricated at the plant of the New York Shipbuilding Co., Camden, N. J. It was knocked down and shipped by water to New Orleans and thence by rail. The hull was erected and the superstructure built in the ship yards of the Southern Pacific at West Oakland, Cal. The keel was laid May 21, 1914, and the boat launched March 18, 1915.

The seating capacity is in excess of 1,800 and the carrying capacity is 3,500. To permit the quick unloading of passengers, a 16-foot gangway extends the length of the boat on the center line. This gangway also makes possible the expeditious handling of baggage and express trucks.

Power Plant

The boat has four oil-fired Babcock & Wilcox boilers, set two on each side of the center line. They contain 10,140 square feet of heating surface and operate at 200 pounds steam pressure. There are two duplex tandem compound inclined condensing engines, developing 2,500 horsepower, which is ample to meet all requirements for power and speed and is nearly twice the amount in use on the company's other boats. The cylinder diameters are 20 to 40 inches with an 8-foot stroke. The cranks are set at a 90 degree angle. The engines were built in the Sacramento shops of the Southern Pacific. The high and low pressure cylinders are supplied with American balanced slide valves. The high pressure cylinders have an auxiliary cut-off located between the steam chests. The main throttle valve is located between the two cut-off valves and has a bypass connection to the low pressure cylinders, permitting the use of steam at boiler pressure for emergency purposes. This is an important safety factor in the operation of the boat. Stephenson link motion with stationary links, is used.

Instead of a continuous shaft operating both paddle wheels, each wheel is driven independently, making it possible to rotate the wheels in opposite directions. This arrangement permits quick turning and increases the ease of handling. The paddle wheels, which are of the radial type, are 24 feet 6 inches in diameter and are each equipped with

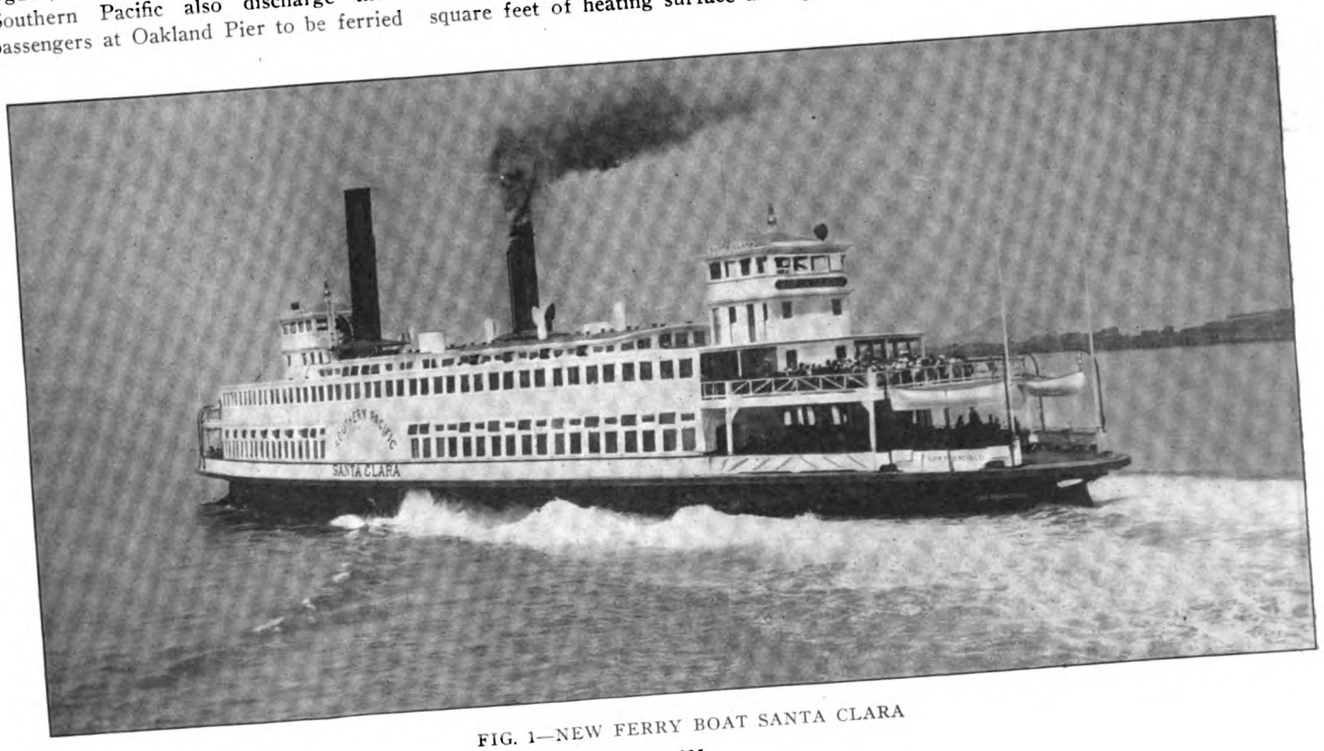

FIG. 1—NEW FERRY BOAT SANTA CLARA

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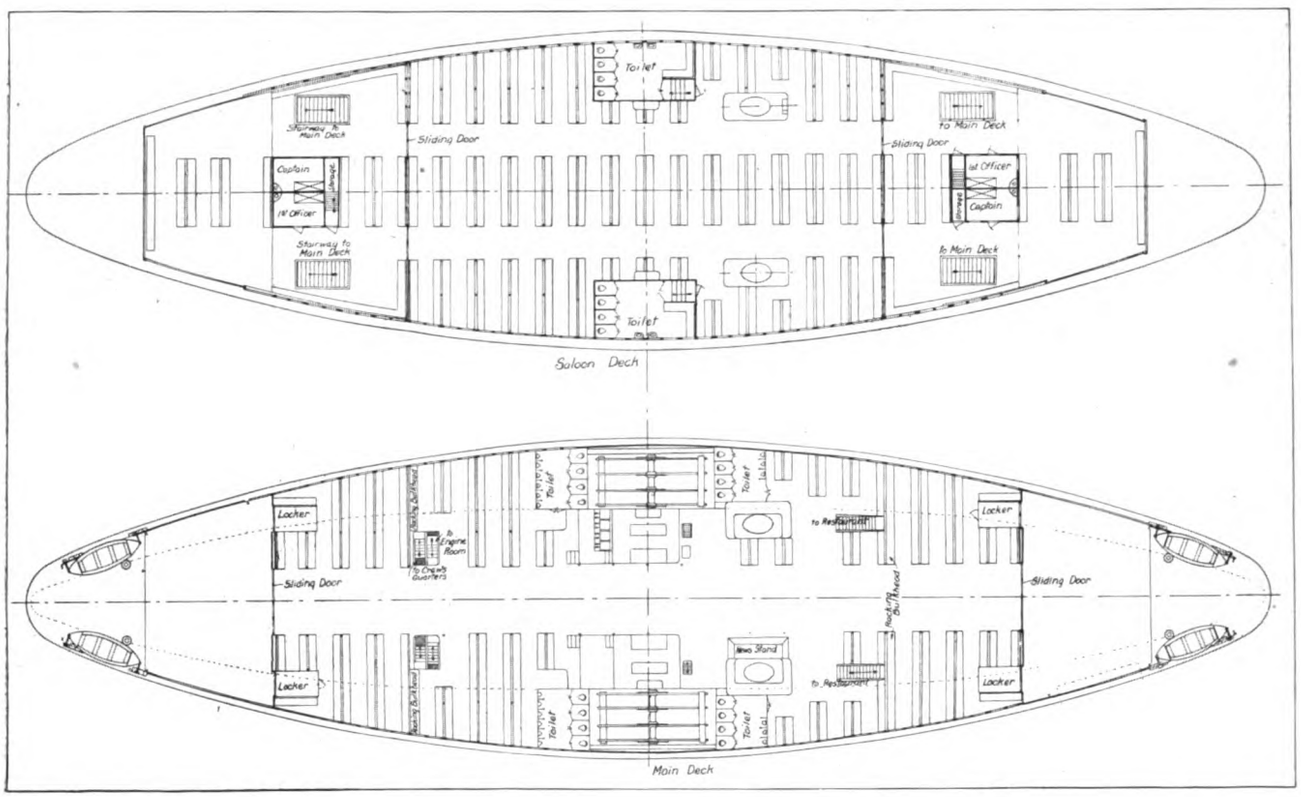

FIG. 2—ARRANGEMENT OF MAIN AND SALOON DECKS

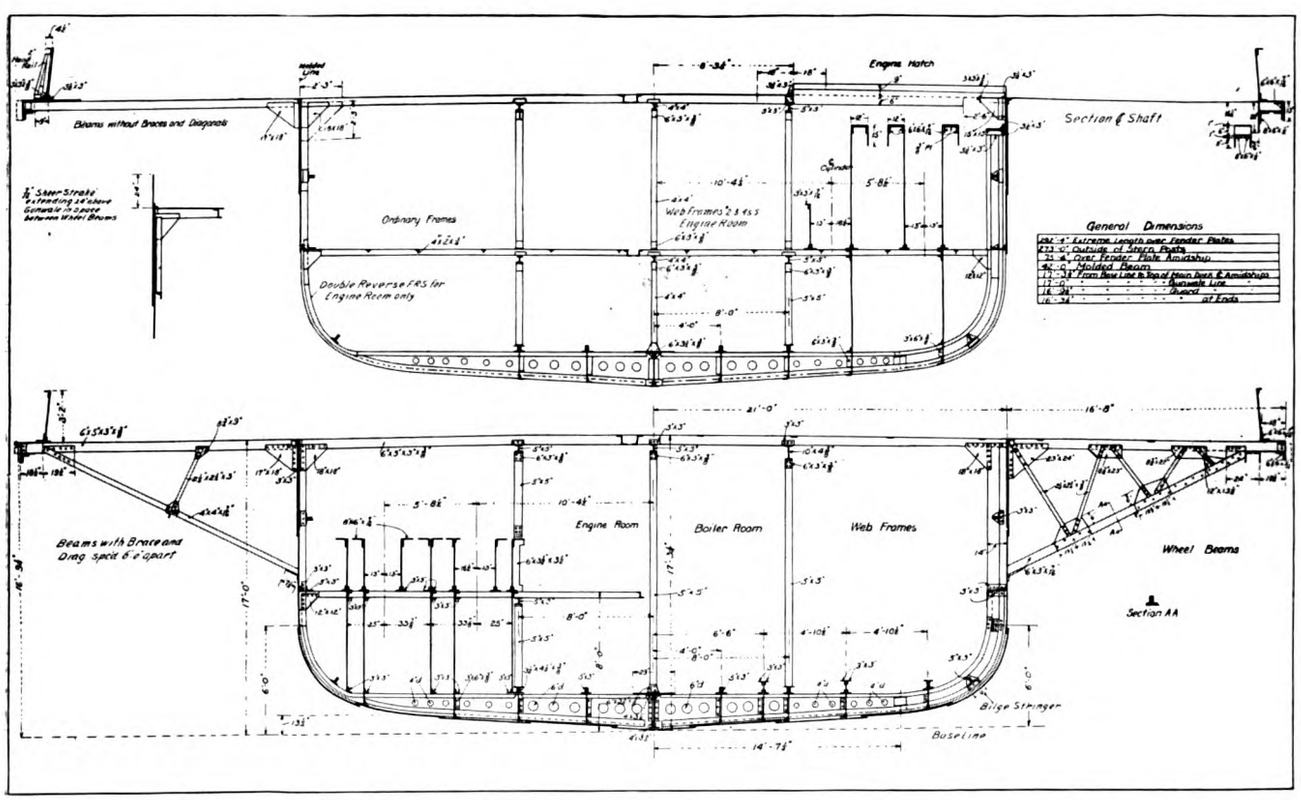

FIG. 3—MIDSHIP SECTIONS OF SANTA CLARA

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20 buckets, having a 3-foot dip at light draft. The paddle boxes are steel throughout. The power, considering the displacement of the boat, was designed to give added safety in avoiding collisions in the fogs which are frequent at certain seasons of the year, and to give added speed, the boat being capable of making 16 miles per hour.

Auxiliaries

The auxiliary apparatus includes the following:

2 four-stage turbine boiler feed pumps.
1 10-inch turbine circulating pump
1 3-inch turbine hot well pump.
1 8 x 12 x 20-inch dry air pump for the watertight compartments.
1 spiral flow service condenser.
1 Wainwright feed water heater.
2 Knowles vertical oil pumps 5¼ x 3½ x 5 inches, for oil burning system.
1 Knowles vertical pump of same size, for fresh water service.
2 Knowles bilge and fire pumps 12 x 8½ x 10 inches, of vertical duplex type.

There are two 35 kilowatt General Electric turbine generators for lighting service. These generators are mounted above the platform deck, high enough to be out of reach of flood water, and could easily be shifted to the main deck.

One of the interesting features of the boat's construction is found in the 12 bulkheads, seven of which extend upward 17 feet to the main deck and five to the platform deck, 8 feet. The latter is watertight. The bulkheads are of watertight construction and consist throughout of 5/16-inch steel plates, stiffened vertically with 5 x 3 x ⅜-inch angles, spaced on about 2-foot centers. The spacing of the bulkheads are such that any two compartments could be flooded through collision or other accident without danger of sinking. The action of the flood water in such an event is shown in Fig. 4.

The bulkheads are spaced as follows: 28, 20, 28, 12, 24, 24, 16, 24, 24, 20 and 30 feet. The collision bulkheads are spaced 8 feet from either sternpost. The inside of the hull below the water line and the bulkheads are covered with a protective coating for preserving the steel. Vents in each compartment permit the entrance of air and in connection with the dry air pumps, maintain a constant circulation, preventing foulness and mold.
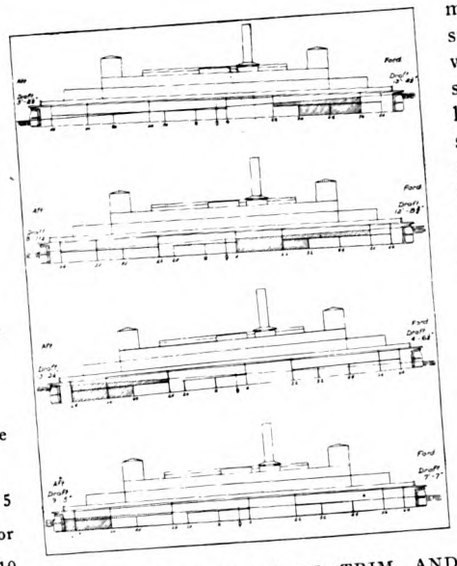
FIG. 4—ALTERATION IN TRIM AND DRAFT WHEN TWO ADJACENT COMPARTMENTS ARE DAMAGED AND FLOODED

A guard extends all the way around the hull of the boat, affording added protection against collision and acting as a bumper when entering the slips.

Main Deck and Cabin Construction

The interior of the boat is exceptionally well lighted, owing to the large window space. A special side wall design was necessary to effect this arrangement. The scantlings are wood with steel tie rods on the inside. The framework comprises steel stanchions and stringers of 3-inch I-beams on the ladies' cabin while on the main deck the stanchions and stringers are 4-inch H-sections. The flooring is Oregon pine, 2½ inches thick, laid over steel sheeting. The cracks are covered with marine glue, giving a tight joint, not affected by heat. No sheathing is used.

Life Preservers

The life preservers in the ladies' cabin are placed under the seats. On the main deck downstairs, the preservers are placed in racks overhead and are easily released by drop cords. This plan is said to have originated with this company. By this system, air is permitted to circulate between the preservers and they are more easily inspected than by a locker system. There are four metal lifeboats, two forward and two aft. These boats are 18 x 5½ x 2¼ feet and can accommodate 13 persons each.

While the trip across the bay is a comparatively short one, every provision has been made for the comfort of the passengers. Numerous seats are placed on the upper deck, the majority of which are protected overhead from rain and sun. The cabin is finished in mahogany and the upper ventilating windows are of stained glass. There is a restaurant on the lower deck and gentlemen's smoking rooms.

The plans for the boat were evolved by the late William McKenzie, who for a number of years was superintendent of the ferry and river steamer service of the company. The construction was under the personal supervision of the present superintendent, J. G. Camp. The thoroughness of the work is attested by the fact that when the boat took the

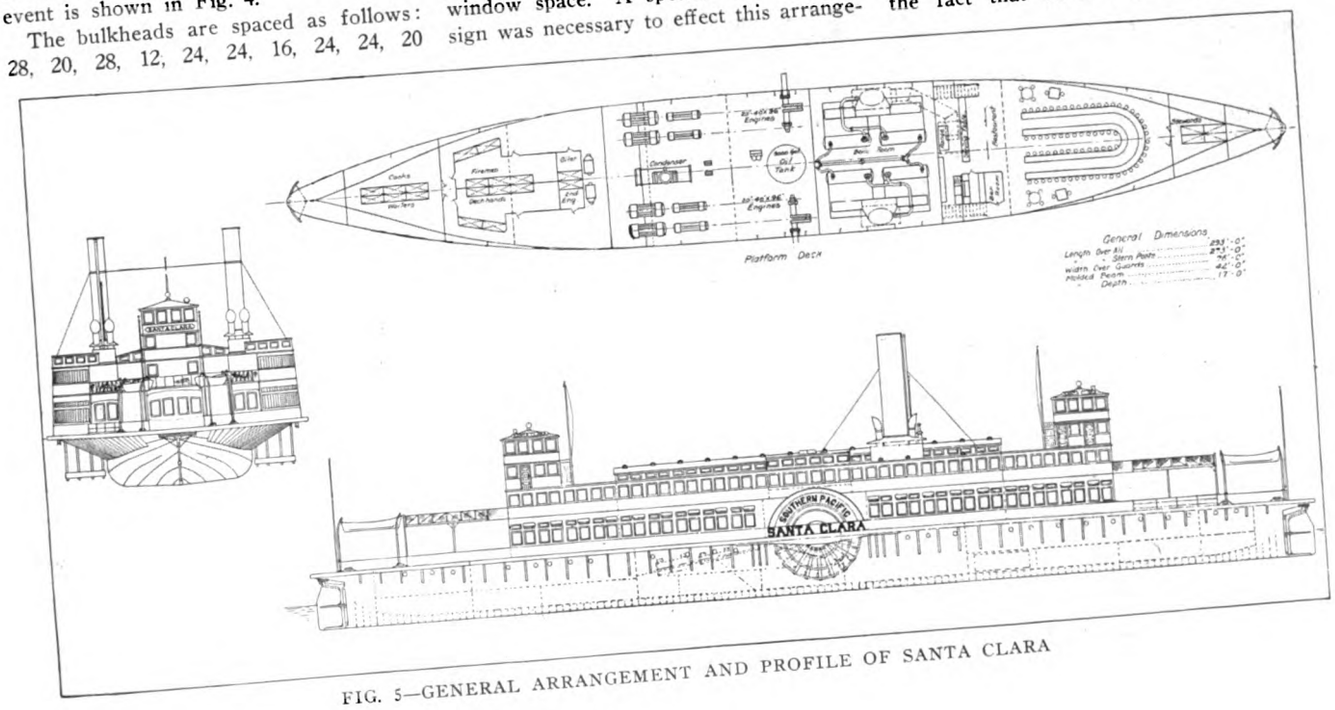

FIG. 5—GENERAL ARRANGEMENT AND PROFILE OF SANTA CLARA

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water, the trim was practically perfect. The boat drew 8 feet 5 inches forward and 8 feet 3 inches aft, a difference of but 2 inches. The distribution of weight was such that no ballast was required.

The Southern Pacific company maintains a complete shipbuilding plant at West Oakland and handles the repair work on all its boats. The shipyards are equipped with a Crandall marine railway of 4,000 tons capacity. All boats are hauled out of the water into the clear. If the repair work is extensive and requires several months to complete, side ways are utilized.

Ore Shipments

Ore shipments on the Great Lakes during August were 8,081,117 tons, against 5,869,477 tons in August, 1914, an increase of 2,211,640 tons. The movement to Sept. 1 was 26,806,420 tons as compared with 21,278,107 tons to Sept. 1, 1914, an increase of 5,528,313 tons. The shipments by ports are as follows:

Port.	August, 1914.	August, 1915.
Escanaba	724,951	933,162
Marquette	368,430	659,293
Ashland	662,951	931,142
Superior	1,886,418	1,375,086
Duluth	1,203,081	2,668,070
Two Harbors	1,023,646	1,514,364
	5,869,477	8,081,117
1915 increase		2,211,640

Port.	To Sept. 1, 1914.	To Sept. 1, 1915.
Escanaba	2,465,692	2,995,862
Marquette	1,049,791	1,773,653
Ashland	2,079,776	2,801,219
Superior	7,576,831	4,439,088
Duluth	4,152,367	9,378,530
Two Harbors	3,953,650	5,418,068
	21,278,107	26,806,420
1915 increase		5,528,313

Lake Erie Ore Receipts

Out of a total of 8,081,117 tons of ore shipped during August, 6,504,987 tons went to Lake Erie ports, distributed as follows:

Port.	Gross tons.
Buffalo	1,037,192
Port Colborne	67,361
Erie	121,482
Conneaut	1,359,697
Ashtabula	1,336,542
Fairport	312,890
Cleveland	1,382,211
Lorain	528,848
Huron	111,656
Sandusky	.....
Toledo	189,330
Detroit	57,778
Total	6,504,987

Hearing on Lanes

That the establishment of anchorage grounds and clear navigation lanes in Vineyard and Nantucket Sounds, Mass., is desirable and practicable was the sense of a public hearing at the Boston chamber of commerce, Sept. 10, Col. John Millis, U. S. Engineers, presiding. A map, showing the location of the proposed anchorage grounds and navigation lanes was published in the September *Marine Review*.

Among the speakers taking part in the conference was Capt. H. L. Colbeth, master of one of the fastest steamers in the coastwise trade, owned by the Eastern Steamship Corporation, operating between Boston and New York, who believed that anchorage grounds should be maintained by law with a coast guard cutter constantly on patrol to remove sailing vessels and barges anchored within the limits. He suggested that the fairway be defined by small buoys. The idea is practicable and might be worked out at relatively small expense, but there should be a penalty. The greatest trouble arises from five and six-masted schooners whose fog signals are inadequate. Capt. H. S. Chase, of the steamer HOWARD, representing the Merchants' & Miners' Transportation Co., favored a clear fairway, but was emphatic for a penalty. His chief protest was against strings of barges left in the narrow channel by tugs, such conditions, he said, were encountered nearly every night. As for buoying the fairway, Capt. Chase thought a buoy every two or three miles would suffice. Col. Millis introduced a report from Supt. McNeil, of the U. S. dredge NAVESINK, which has worked intermitently at Pollock Rip during several years to July 2, 1914, that the channel has never been observed free from anchored vessels, particularly schooners and barges. The observation was made between Quick's Hole and Pollock Rip, distance about 40 miles, twice a week.

J. Howard Gardner, general manager of the New England Steamship Co., New York, suggested that the steamer track between Martha's Vineyard and Nantucket should be kept open, as vessels forced to anchor out of the main channel, might drop anchor where convenient, possibly congesting a track used annually about 2,000 times by steamers controlled by his company. Capt. E. R. Geer, for 20 years employed by the New England Steamship Co., having had charge of every ship operating on the different routes, favored a fairway for the Martha's Vineyard-Nantucket steamers in addition to the clear navigation lanes over the shoals. He suggested that a powerful motor boat might serve as patrol while a coast guard cutter or tug could attend to towing of craft that anchored unexpectedly within the restricted area. Capt. M. E. Thompson, master of sail craft, fore-and-afters as well as square-riggers, believed that captains would be inclined to take kindly to the anchorage area idea partly from the lessening of collision risk.

Another conference will be held either in Boston or New York, at which something definite to meet viewpoint of seafarers is to be presented by Col. Millis. In the meantime an expression is to be sought from the management of towing concerns.

More Orders Are Placed

THERE is no indication of a lull in the unprecedented shipbuilding movement along the Atlantic coast. New work is being awarded steadily and a large number of propositions still are in the negotiation stage. Fully a score or more of new boats are offered but deliveries remain so remote that a number of these are being held off for the time being. Shipbuilders see no reason why the present record-breaking period of construction shall not be extended for several years.

Reported awards of good-sized merchant vessels to Atlantic coast yards during the month of August totaled seven, increasing the number of vessels contracted for during the past six or eight months, to 56. The Sun Oil Co. awarded two large tankers to the Wm. Cramp & Sons Ship & Engine Building Co. and the Union Oil Co. placed a tank boat with the same yard. The New York Shipbuilding Co. received two tank ships for an interest the identity of which has not been disclosed. All these boats are about 10,000 gross tons capacity. The Crowell & Thurlow Steamship Co. placed two more 9,000-ton vessels with the Newport News Shipbuilding & Dry Dock Co., on which the deliveries extend a little more than a year from the present time. The Florida & East Coast Railroad Co. placed a large car ferry for its Key West-Havana service with the Cramp yard, duplicating a similar craft ordered a year or more ago.

Because of the filled-up condition of the Atlantic Coast yards, several vessels which have been up for bids have been closed with shipbuilders on the Pacific coast, where the deliveries are more favorable. The Ward line ordered a 6,000-ton vessel, 368 feet long, for the New York and Cuban Mail Steamship Co. from the Seattle Construction & Dry Dock Co., Seattle, Wash. The Standard Oil Co. placed a tank boat with the Union Iron Works, San Francisco. Many ship builders are enlarging their facilities.

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War Retards British Ship Building

Merchant Tonnage Under Construction Shows Steady Decrease—Interesting Data on Increased Value of Merchantmen

SHIPBUILDING in England, save for government work, has suffered a tremendous setback as a result of the war. This fact is patent to everyone who has studied shipping and shipbuilding of late. It is also manifest, from equally unmistakable evidence, that the cost of building ships in England has tremendously advanced since the war. Today a ship can be built quicker and at lower cost in American yards than abroad, even if it were possible to persuade British shipbuilders to accept contracts.

A number of angles on the British shipbuilding industry have lately been studied by the *Journal of Commerce* (Liverpool) and prove in statistics what has been well known generally to observers. Contrasted with the same date last year, the showing on June 30 this year was as follows:

	June 30, 1915, tons, gross.	June 30, 1914, tons, gross.
Vessels in hand.....	1,506,925	1,722,124
Vessels commenced during three months ended....	172,325	403,383
Vessels launched during three months ended....	148,214	444,877
Vessels completed during three months ended....	252,867	572,115

Indicating not only the same decline, but also reflecting how slowly the work under way progresses—doubtless due to the right the government frequently exercises of withdrawing men from private work for immediate national needs—is another table, contrasting the end of June with the end of March, just past. This table is as follows:

	June 30, 1915, tons, gross.	Mar. 31, 1915. tons, gross.
Vessels in hand.....	1,506,925	1,587,467
Vessels commenced during three months ended....	172,325	292,421
Vessels launched during three months ended....	148,214	267,612
Vessels completed during three months ended....	252,867	332,270

Where the Shrinkage Comes

When the various districts are studied comparatively it is seen that, with the exception of Hartlepool, Whitby and Sunderland, all shipbuilding centers show a decrease in mercantile tonnage in hand at the end of June as compared with that at March 31. In the Hartlepool and Whitby district the total is about 10,000 tons higher, while at Sunderland the increase is only 1,500 tons. At Belfast the drop amounts to 19,480 tons (280,180 to 260,700 tons); at Barrow, Maryport and Workington, 800 tons (2,685 to 1,885 tons); and at Liverpool and Birkenhead, 4,265 tons (28,330 to 24,065 tons).

Similar computations made approximately by Lloyds *Register and Shipping*, covering the first year of the war and computed at the end of the four quarters, show ships under construction in such a way as to make clear how slow is the progress of some of the building operations from quarter to quarter.

These figures should, however, be taken in conjunction with the fact that a large number of vessels returned as building are really not being proceeded with, or are being constructed very slowly:

Date.	No. of vessels.	Gross tons.	Decrease from previous quarter.
June 30, 1914..	477	1,722,124	168,732
Sept. 30, 1914..	486	1,723,550	*1,426
Dec. 31, 1914..	462	1,627,316	96,234
Mar. 31, 1915..	471	1,587,467	39,849
June 30, 1915..	442	1,506,925	81,542

*Increase.

Between June 30, 1914—one month before the war—and the end of June, the net decrease in mercantile tonnage in hand was 213,199 tons. From the foregoing it will be seen that, if the completion of contracts had been carried out as promptly as was the case before the commencement of hostilities, there would have been exceptionally few of the ships now on the stocks still uncompleted.

The 442 mercantile vessels, with an aggregate gross tonnage of 1,506,925, under construction at the end of June, have an average tonnage of 3,409, as compared with an average of 3,370 tons on March 31, and of 3,522 tons on Dec. 31, 1914. The statistics given in Lloyds returns do not, however, take into account vessels of under 100 tons each.

One of the vessels building on June 30 was over 40,000 tons gross, one between 30,000 and 40,000 tons, one between 25,000 and 30,000 tons, one between 20,000 and 25,000 tons, nine between 15,000 and 20,000 tons, four between 12,000 and 15,000 tons, four between 10,000 and 12,000 tons, 27 between 8,000 and 10,000 tons, 28 between 6,000 and 8,000 tons, 35 between 5,000 and 6,000 tons, 52 between 4,000 and 5,000 tons, 34 between 3,000 and 4,000 tons, 32 between 2,000 and 3,000 tons, 30 between 1,000 and 2,000 tons, 25 between 500 and 1,000 tons, and 15 were between 100 and 500 tons.

The fluctuations in the cost of a typical 7,500-ton steamer are tremendously illustrative of the effect of the war on the cost of shipbuilding in British yards. For instance, the line of progress starts at £42,500 at the end of the second quarter of 1914 (almost the exact start of the war) and rises steadily without variation through the space of one year to £82,500. The two most recent previous "peaks" were £58,000 late in 1912, and £67,000 in 1902, with deep valleys between running as low as £36,000 early in 1908. Reducing this chart of costs to quarterly dates, the showing is as follows, the figures being pounds sterling:

	First quarter.	Second quarter.	Third quarter.	Fourth quarter.
1898	.....	.....	48,600	54,500
1899	55,800	50,500	48,800	51,600
1900	52,600	53,800	52,000	60,700
1901	54,200	49,200	49,500	47,600
1902	43,000	46,000	48,000	47,600
1903	46,000	50,900	39,700	39,200
1904	39,100	38,800	38,500	40,500
1905	40,500	36,500	42,500	44,500
1906	40,000	43,500	41,600	40,600
1907	40,800	40,200	39,400	38,500
1908	37,000	36,500	36,000	36,100
1909	36,200	36,300	36,350	38,000
1910	37,600	36,400	37,100	40,200
1911	41,500	43,300	45,500	47,000
1912	49,500	51,400	54,000	55,500
1913	54,500	54,000	50,900	48,000
1914	45,000	43,000	50,000	62,500
1915	82,500	.....	.....	.....

A Study of Ship Costs

Commenting on this showing, one English observer states:

"It is impossible at the present time to state exactly what a new vessel of the size mentioned would cost in Great Britain insofar as there is no such vessel on the market; it is impossible to contract for such a steamer for anything like early delivery, and it is doubtful if a ship builder could be induced to name a price and guarantee delivery.

"Then, again, it depends upon whether a steamer is owned in this country or abroad, as a neutral vessel is able to command a much higher price than if under the British flag. The risk of government requisitioning is a serious one, and cases could be mentioned where vessels have been sold when under government requisition which could have fetched 25 per cent more if they had been free, while a 7,500-ton steamer, built last year, which has been requisitioned, and is worth about £82,500 if free, would fetch only about £73,000 if forced on the market, that figure having just been offered.

"The record price obtained so far

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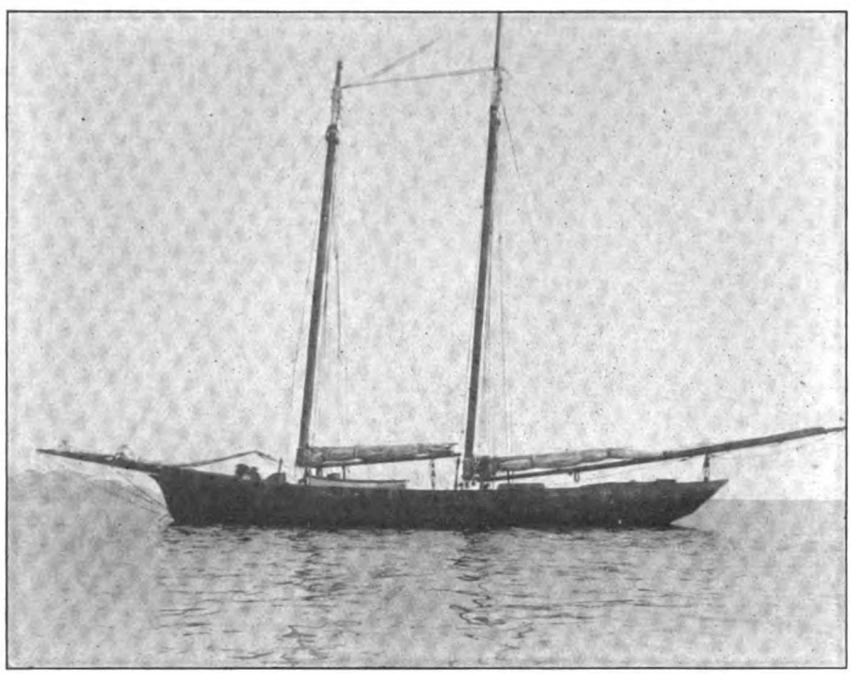
for a vessel of 7,500 tons was no doubt secured by the Greek steamer SPYROS VALLIANOS which, although 13 years old, fetched no less than £75,000. A British steamer of about 7,600 tons, built in 1900, which was sold in December, 1911, for £27,000 and in March, 1915, for £40,000, was sold in London in April for £52,500, and the purchasers could get a profit on this figure now. A steamer of 7,250 tons deadweight, built at Greenock two years ago, is in the market for sale at £101,000, another vessel of about the same size, built by Messrs. Gray two years ago, is in the market for £85,000, while a steamer of 7,500 tons, built early last year for London owners, was six or seven weeks ago in the market for £78,250, but £82,500 would probably have to be paid at the present time to secure the vessel if free from government charter.

"In our opinion, a new steamer of about 7,500 tons would at the present time be worth about £82,500. It is impossible, however, to argue from this what, under the ordinary rules, would be the value of a vessel ten years old, as it is generally considered that from £9 to £10 a ton would have to be paid for such a steamer. Under normal circumstances owners would deduct somewhere about 5 per cent per annum from the market price of a new vessel to ascertain the value of a vessel ten years old.

"This rule, however, does not apply at the present time, in so far as purchasers look at the earning power of a vessel under existing circumstances for the next two years rather than the life and condition of the vessel. History has shown that sooner or later during a depression the value of tonnage touches the previous low prices, but how long it will take existing prices to touch, say, £5 a ton it is impossible to say, as the present condition of the shipbuilding yards points to there being a dearth of new tonnage for some years, while in the meantime an abnormal wastage is going on.

"The vessel referred to for the first nine years was a steamer 360 feet in length by 48 feet in breadth by 30 feet 10 inches in depth, and carried from 7,000 to 7,250 tons deadweight on a draft of 24 feet 6 inches. In the later vessels the dimensions were altered to 380 feet by 49 feet by 29 feet and the draft reduced to 23 feet 8 inches. In 1906 the new board of trade rules enabled the freeboard to be reduced, which increased the carrying capacity of the vessel referred to by about 60 to 80 tons. In 1910 the introduction of new rules by Lloyds *Register* resulted in a saving in scantlings which enabled the vessel to carry a further 150 tons. We have, therefore, given her capacity as 7,500 tons all through; but, as stated in previous years, it should be borne in mind that the vessel which today carries 7,500 tons would have carried considerably less 15 years ago.

The filled up condition of English shipyards is bringing inquiries for ocean boats to this side of the Atlantic. One English company is asking quotations on three vessels and many other ships are out for figures.



PATHFINDER WILL BE EQUIPPED WITH GAS ENGINE

Install Gas Engines

The San Francisco Bar Pilots Association will shortly convert their splendid fleet of schooners into auxiliaries. This decision was reached after a great deal of discussion among the old sea dogs, who have spent most of their lives on the high seas, piloting ships through the Golden Gate to a safe anchorage in San Francisco bay. The action of the association is a strong tribute to the efficiency and general utility of the modern gas engine.

The famous schooner PATHFINDER, which is shown in the accompanying illustration, will be the first of the pilot boats to have a gas engine installed. She is probably the best known of the pilot boats, and was built at Benecia, Cal., by Captain Turner in 1900 and is 91 feet 6 inches over all, and 80 feet on the water line with a beam of 24 feet and a depth at hold of 9½ feet.

PATHFINDER is unusually well equipped to insure the comfort of the pilots who go outside the heads in her and stay there until all aboard have been called into service by vessels requiring pilotage. There is a boatswain's locker in the bow. Aft of this are the quarters for the crew, with three berths on the starboard side and two on the port. In the space corresponding to the forward berth on the port side is a lamp and rope locker. The galley stove is amidships in the after portion of the crew quarters, with a pantry on the port side and a stateroom on the starboard.

Engine Room

Immediately aft of this is the engine room, where her new propelling machinery will be installed. This will be a four-cylinder Atlas engine, built in Oakland, Cal., with 10½-inch bore and 12-inch stroke. This engine will turn a 60-inch two-bladed propeller at 300 revolutions per minute. The new electric lighting plant also will be in the engine room and will consist of a Carlisle & Finch 3 kilowatt plant. This will furnish lights as well as power to operate the winch for lifting the anchor. The engine room also will contain sail lockers and wood lockers for the galley stove. Immediately aft of the engine room is the main cabin, with three berths on each side, and aft of the cabin are two storerooms, toilet and another sail locker. In the after peak is another sail locker. A feature of the new installation will be a new bronze rudder, designed by David Dickie of San Francisco. This rudder has been cut away to make room for the propeller, instead of having it in the well. As soon as PATHFINDER is launched the pilots intend to make a similar installation in GRACIE S. and AMERICA.

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On the Coasts, Lakes and Rivers

What's Doing and Who's Doing It

On the Delaware River

By Dr. C. S. Street

THE big steam collier FRANKLIN was launched August 21 from the yards of the New York Shipbuilding Co., Camden, N. J. She is for the Coastwise Transportation Co., Boston, and is the seventh vessel of this company's coal carrying fleet built by the New York Ship Building Co. Seven other vessels of the same general type are under contract by the Camden yards. These vessels will have a coal carrying capacity of 9,400 long tons. FRANKLIN is 395 feet over all, 55 feet beam, and has a draft of 26 feet when loaded. The engines can develop about 2,000 horsepower giving the new vessel a speed of 11 knots. FRANKLIN is self-unloading, and has large bunkers and ballast tanks.

* * *

A number of banana shipments have reached Philadelphia recently in poor condition, as high as 30 per cent being damaged fruit. One cargo arriving about Aug. 29 with 20,000 bunches of bananas, was found to be unsalable.

* * *

The old light house on Brandywine shoals has been removed. This has been one of the eye-sores of the lower bay for a long time.

* * *

The government shortly will finish work on the Oldsmans creek dike. This below-the-water obstruction has caused considerable loss to sailing oyster boats, pleasure schooners and motor boats during the last two years. Two large dredges and pile drivers are now at work. At the end of the dike a light house similar to the one on Finns Point jetty will be erected.

* * *

A large bridge being constructed about two miles below Trenton, N. J., has increased the difficulties of sailing to that city. There are two openings of 50 feet each, and these caused the steamer line some trouble. It is stated that new piers for landing passengers and freight will be erected below the new bridge and trolley lines run to them.

* * *

A new pier is to be erected at Essington and run 1,000 feet into the river. Some remonstrance has been made as the pier will close off the Corinthian, Philadelphia and Riverside Yacht Clubs located just below the proposed pier.

* * *

At Deep Water Point, very near the range light station, a large pier has been run out in the river. This accommodates steamers going to Fenton beach. Near the beach is the duPont powder works. The shore line has been fenced in and many detectives are guarding this section of the river day and night.

* * *

Another large pier has been erected at River View beach. It closes off a section of the New Jersey channel, but is not on the range lights.

* * *

The tonnage of ships under construction at Philadelphia is the largest of any port in the United States. That city is now a close rival of the large British centers, and is exceeded only by Belfast, Glasgow and New Castle-on-Tyne, in number and tonnage of ships now under construction.

* * *

H. A. Magoun, vice president of the New York Ship Building Co., Camden, N. J., recently stated that never in the history of the port of Philadelphia has there been such activity. This company is employing 4,000 men and has three year's work ahead.

* * *

The Harlan & Hollingsworth Corporation has enough boats under contract to insure at least two years' work.

* * *

The Philadelphia Ship Repair Co. located at the Mifflin street wharf is making repairs of every character. Two schooners, MARK and S. C. PENDLETON, are undergoing extensive repairs, MAYNEVILLE is having her bottom overhauled. The dredges ARIZONA and GOVERNOR PENNYPACKER are being thoroughly refitted and the dredge, SEVERN KENNEDY, is receiving new planking and upper works. CHESTER, a freighter, has extensive repairs to be made. The yard is working double turn.

* * *

Wm. Cramp & Son Ship & Engine Building Co. has purchased all the ground east of Richmond street as well as the Cassidy brass foundry. The twin screw turbine yacht of H. P. Whitney, which was built at the Cramp yards is ready to be turned over to the owner. She is a large houseboat cruiser.

* * *

A 10,000-ton tanker for the Petroleum Transport Co. is nearly finished. A large dump barge for the Panama canal has been delivered at the breakwater and will be towed to the canal. The new 10,000-ton steamer building for the Atlantic & Pacific Co., has been named SANTA BARBARA.

Around the Golden Gate

By A. A. Willoughby

THE arrival of the American clipper ship ARYAN, Capt. MacLachlan, in port August 26, brought a touch of the old sailing vessel days. The boat came in before a stiff breeze through the Golden Gate with all sails set. The trip from Newcastle, Australia, which was made in 71 days, was one of the finest in 20 years, according to Capt. MacLachlan. ARYAN brought a cargo of coal to Hind, Rolph & Co.

ARYAN's arrival brought up a few recollections of the feats of clipper ships. The record run by a clipper ship between New York and San Francisco was made by SURPRISE, which made the 16,000 mile trip around the Horn in 96 days. SOVEREIGN OF THE SEAS once made a run of 10,000 miles without once tacking or wearing. SEA WITCH made a run from the Golden Gate to New York with only reefing the top-sails twice.

ARYAN was built in Maine in 1893 and has been operating of late years in Pacific waters.

* * *

Reduced pilotage charges are now in effect at San Francisco, through volutary action by the Bar Pilot's Association. The rate for deep water vessels is now $2 a draught foot and 2 cents a ton on vessels of over 500 tons. The new rates are about a third lower.

* * *

The codfishing fleet has been arriving during the past several weeks and an unusually heavy catch is reported. VEGA arrived Aug. 26, making a record run of 14 days from Seminotff Island, Alaska. She brought 119,000 codfish. The salmon fleet commenced arriving the last week of August. Most of the boats have full cargoes. The summer which has been warmer than for several seasons previous, caused a larger run of salmon than usual.

The call for vessels to handle a fast growing trade between the west coast and Australia continues strong. A large shipment of wool destined for New York will shortly arrive from the Antipodes for transshipment. This is the first time in many years that any large quantity of wool has gone through San Francisco. The scarcity of ships and the prevailing high charter rates has made it more profitable to ship to San Francisco and then transship through the Panama canal or by rail than to follow the previous route through the Suez canal and across the Atlantic.

* * *

One of the longest tows on record was completed recently with the arrival of the steamer FALCON towing the barge CHARLES NELSON. Over 13,000 miles were logged. The trip included carrying a cargo of lumber from Puget Sound ports by way of the Panama canal to Boston and on the return coal was loaded at Baltimore for San Francisco.

* * *

Direct steamship service between San Francisco and Siberia was commenced the latter part of August with the sailing of the steamer INDIEN of the East Asiatic fleet. The ships in the new service will operate on a round-the-world schedule, starting their voyages in the north of Europe, calling at French and Italian ports and thence to San Francisco by the canal. They go direct to Vladivostock from Frisco, thence to Japan and eastward through the Indian ocean and the Suez canal to the starting point.

* * *

The Union Oil Co. launched its new power barge KERN at Moore & Scott's Iron Works in Oakland, Cal., Aug. 28. The barge is equipped with two semi-diesel engines and has

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a maximum speed of 11 knots. It will be used on the Sacramento and San Joaquin rivers. It has a cargo capacity of 80,000 gallons of oil.

* * *

Capt. Henry Morton, who made many trips across the Pacific as master of the Pacific Mailer MONGOLIA, went out on TENYO-MARU early last month as a passenger. He has become a tea buyer and shipper.

* * *

The American-Hawaiian company has added three new freighters, FLORIDAN, ARBOREAN and ARTISAN, to its fleet operating between San Francisco and the Atlantic seaboard. These bring up the company's vessels to a total of 28. All boats are reported coming and going with full cargoes.

* * *

George Wiley, for many years chief steward of the TOYEN KISEN KAISHA, has resigned and will devote himself to shore pursuits.

* * *

A huge cigar shaped raft of piling arrived in San Francisco Aug. 13 from the Columbia river in tow of the tug HERCULES. The rafts were formerly a familiar sight in the harbor but the timber is now dressed in the north and brought down in lumber schooners. This raft is the first to arrive in two years.

* * *

The British bark LORD TEMPLETON arrived Aug. 13 with a cargo of 3,220 tons. The boat was the first sailing vessel to come through the Panama canal and is also the first square-rigger to make the round trip to Europe since the outbreak of the war.

On Puget Sound

By F. K. Haskell

AN EXPENDITURE of $50,000 for converting the steamers SPOKANE and CITY OF SEATTLE into oil burners is to be made by the Pacific Coast Steamship Co. Although the same interests that control the Pacific Coast Steamship Co. own coal mines and transportation facilities, oil has been found not only cheaper but more convenient as fuel for the company's steamers.

* * *

Robert W. Wright, assistant general manager of the Seattle Construction & Dry Dock Co., has resigned from that corporation. Mr. Wright came to Seattle recently from Hoboken, N. J., where he was superintendent of the Tietjen & Lang Dry Dock Co.

* * *

H. R. Elliott, who for the past ten years has represented the Alaska Steamship Co., at Nome, Alaska, has been appointed Seattle agent of the freight department of the Cunard line.

* * *

The cruiser yacht ALBERS, one of the finest vessels of her type on Puget sound, has been sold by the Albers Bros. Milling Co., to Alexander & Baldwin, general agents of the Matson Navigation Co. ALBERS is to be shipped aboard one of the vessels of the Matson line to the Hawaiian islands and will be used by H. A. Baldwin as a business and pleasure craft at Kahului under a Hawaiian name. She is 50 feet long, 10½ feet beam and 4 feet draft, and is equipped with a 40-horsepower 4-cylinder Atlas engine.

* * *

An important addition to the Puget sound fleet of the Lillico Launch & Tow Boat Co. will be the $12,000 freighter AMAZON, now building at the yard of John Wilson on the east waterway, Seattle. The new freighter is 65 feet long, 20 feet beam and of shallow draft. She will have a capacity of about 75 tons and will be equipped with a Fairbanks-Morse 80-horsepower semi-diesel engine. AMAZON will be in charge of Capt. Andor Kastan and will be used in freight service on Puget sound.

* * *

A great gold shipment from Japan for San Francisco arrived in Seattle recently on the British Blue Funnel line steamer TALTHYBIUS, Captain F. W. Cullom. It consists of $1,000,000 of gold coin, consigned by the International Banking Co., Yokohama, to the International Banking Co., San Francisco. The vessel also brought $100,000 worth of gold concentrates for the Selby smelter. Including gold, the cargo is valued at $3,100,000. At Vladivostock one of the greatest freight congestions ever known may be seen says Capt. Cullom. It consists of a total area of 40 square miles of freight, principally munitions of war, piled up in heaps. To this TALTHYBIUS added 19,364 tons, which she discharged in 10 days. When the ship sailed 14 great ocean vessels were in berth at Vladivostock, with six others waiting for an opportunity to discharge.

* * *

Captain George Roberts, one of the founders of the Puget Sound Navigation Co. and of the Alaska Steamship Co., died recently at Sol Duc hot springs, near Seattle. Captain Roberts was born in England in 1851 and came to Puget sound in 1872. Until 1905 he was in command of vessels plying out of Tacoma, retiring a few years ago.

* * *

On her last trip from the Orient to Tacoma, the big Japanese liner PANAMA MARU, of the Osaka Shosen Kaisha, ran aground in a dense fog at Three Tree point, midway between Seattle and Tacoma. Later, with the help of three tugs and the high tide, she was floated and proceeded to unload a large cargo in Tacoma. PANAMA MARU also brought word that the Osaka Shosen Kaisha has placed an order for six new steamers of 12,000 tons each, with the Osaka Iron Works, Osaka, Japan. These vessels are to be 425 feet long, 56½ feet beam and 40½ feet draft. Officers of PANAMA MARU imply that some of the new ships may be used in the trans-pacific trade, following the arrangement of subsidies.

* * *

H. F. Alexander, president of the Pacific Alaska Navigation Co., which operates the Admiral line of steamers in the California and Alaska trade, has announced that his company plans to increase its fleet plying to Alaska from Puget sound. The company will either buy or build two new ships.

* * *

Prosperous carrying trade between Seattle and Alaska has enabled the directors of the Alaska Steamship Co. to declare an extra dividend of 5 per cent, as well as the regular dividend of 1½ per cent. This brings the total dividends paid since the first of the year up to 8 per cent.

* * *

More than $100,000 in gold dust was recently recovered from the wreck of ISLANDER, which carried a great number of Alaska pioneers to their deaths, 15 years ago near Juneau, Alaska. The work was done by divers, who operated from a bell 300 feet below the surface.

Guild Grows

The Imperial Merchant Service Guild is making rapid progress on the Great Lakes. The purpose of this organization is to unite into one huge society all of the certificated captains and mates in the British Empire. At present the organization has over 15,000 members. Captain Geo. S. Laing, honorary agent, 290 Robert street, Toronto, states that the membership on the Great Lakes has been increasing during recent months. Captain Laing also states that a large number of English and Canadian lake men are now in Atlantic service, rendering efficient aid to the British Empire in the prosecution of the war.

New England Waters

By George S. Hudson

CAPT. Walter M. Ervin, former master of the schooner DOROTHY BARRETT, and now a stevedore at Mystic wharf, Boston, was the first coasting skipper in New England waters to install a wireless telegraph outfit on his craft.

* * *

Andrew J. Savage, U. S. local inspector of steamboat boilers, Boston, has retired at the age of 81 years. He received his government appointment in 1873. Mr. Savage was born at Woolwich, Me., and went to sea when a youth as an oiler on the steamer GEORGE WHITNEY, pioneer ship of the Merchants & Miners Transportation Co., Boston. At the outbreak of the Civil war he was transferred to S. R. SPAULDING, under charter to the government, becoming first engineer. After the war, he served as chief engineer on GEORGE APPOLD. In 1871 he took charge of construction of the steamer WILLIAM CRANE, upon which he finished his engineering career afloat. During his term of service in the engine rooms of steamers, Mr. Savage rounded Cape Hatteras 202 times. W. F. Gilman has been named to succeed him.

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A nautical training school has been established at Marblehead, Mass., the famous yachting center, by C. H. W. Foster, Boston millionaire banker and yachtsman, to instruct young men in the art of building, rigging and handling vessels. Mr. Foster defrays all expenses incident to the venture, having leased the old custom house and Humphrey wharf. Extensive alterations have been completed and the school begins with an attendance of 40. Charleton L. Smith, deep water sailor, designer and boat builder, has been secured as instructor and will devote his entire time to the work. Every pupil is expected to attend the public schools as well. Francis B. Crowninshield, a descendent of Ben Crowinshield of Salem, who built CLEOPATRA'S BARGE, the first American yacht to cruise in foreign waters, has given the school a set of colors. Mr. Foster has made Marblehead his home since a youth and probably has owned more racing boats than any other man in the town. A few years ago he owned the auxiliary ketch AUTOCRAT, built to demonstrate that the fishing industry may be prosecuted economically in the ketch type. Recently he ordered a three-masted schooner on fisherman lines for a similar experiment calculated to benefit the fisheries industry.

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W. Sterling Burgess, a son of Edward Burgess, the noted designer, is turning out hydro-aeroplanes at the rate of one daily for the Allies at his factory near Boston, which, formerly devoted exclusively to vessel construction, is being enlarged in an effort to keep pace with the demand.

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The new Coast Guard cutter OSSIPEE has been placed on station in Maine waters, with headquarters at Portland. This vessel takes the place of the old WOODBURY, which has been sold to Thomas Butler & Co. of Boston, to be converted into a barge. OSSIPEE will be commanded by Capt. Ridgely, former master of WOODBURY.

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Around New Orleans and the Gulf

By H. H. Dunn

WITH the sailing of the steamer PETER H. CROWELL from New Orleans recently, the Carribean and Southern Steamship Co. inaugurated a new service between the Crescent city and South American ports. Promises to support the line have been received from shippers of Chicago, Davenport, Memphis, Kansas City and New Orleans. The line has been operating ships out of New York and Mobile into Latin-American waters for several years. It recently enlarged its capital and has informed the New Orleans assocation of commerce that it will make that city its home port for regular service to the east coast of South America.

* * *

Mayor William Hale Thompson of Chicago, and James Pugh, a Chicago warehouse owner, are reported to have purchased a controlling interest in the Chicago, St. Louis and Gulf Transportation Co., whose steamer STEEL CITY has been making regular trips from Illinois points down the Mississippi to New Orleans. The New Orleans office of the company announce that several towboats and number of steel barges immediately will be put into commission in the river trade. A complete reorganization of the company is announced, and it is said that passenger steamers will be operated for tourist travel between Chicago and New Orleans during the winter months.

* * *

C. E. Smith, a St. Louis, consulting engineer, spent several days in New Orleans recently studying river terminals and docks as part of his duties as assistant to J. S. Hooke, director of public utilities, of St. Louis, in working out a comprehensive system of terminals and docks for that city. Several million dollars are to be spent by the Missouri port in improving its facilities, and the port works of New Orleans are being taken as models.

* * *

Thirty persons, marooned in the lighthouse at Leesburg, Cameron parish, La., were rescued by the Louisiana conservation commission patrol boat BRANT, during the recent storm. Ten small power launches, which had been torn from their moorings, also were saved by BRANT. All the crops in Cameron parish were swept away. BRANT, after her work of rescue, carried load after load of bedding and provisions to the citizens of the parish. P. D. LeBlue, conservation agent of Calcasieu parish, was in charge of the work, and was publicly commended by M. L. Alexander, president of the conservation commission, for the efficient manner in which he conducted it.

* * *

Although higher rail rates on sugar, molasses, beer, cabbages, crates, nails, spikes and some other commodities have been allowed to the Mississippi Valley and Edenborn lines out of New Orleans by the Louisiana state railroad commission, boat lines running to the same territory have announced that their rates will remain normal. Rail increases in many instances amount to as much as 70 per cent. The keeping down of the water rates has driven a number of shippers to patronize the steamer lines to the exclusion of the railroads. The changes in rail rates went into effect Sept. 15. Cancellation of package or parcel rates is authorized and the railroads are allowed to collect on the 100-pound basis. The new rates affect freight for Baton Rouge, Bayou Sara and the Kenner district. In the Bayou Sara section and all the way up the river to the capital are a number of towns whose merchants are directly affected by the increase in rates. All the steamers, of which there are a number plying to these towns, will maintain previous rates and will collect tariffs on a river basis, that is, from package charges to 100 pounds.

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Legal action by members of the New Orleans Steamship Association to prevent enforcement of proposed port commission charges for wharfage and berthage are expected by Oct. 15, on which date the new rules are to go into effect. The proposed schedule, according to W. H. Hendren, manager for the Texas Transport and Terminal Co., cuts down the ship's free time from 46 to 31 days; adds about 1 cent per gross ton to the wharfage cost, and makes an additional charge of 3 cents per square foot for preferential wharf space. "All the steamship agents," said Mr. Hendren, "were given to understand that it was the purpose of the board to adopt a set of charges which would equalize the burden and reduce the costs to the ships. That was the object of the report of the port engineering experts, and I thought it very fair. It placed the charges on the freight; and the tariffs on the steamship agents were fair, but the new schedule will work a hardship on the vessels and their owners and also will give the port a handicap." Traffic officials of railroad trunk lines entering New Orleans think that the new rules are too indefinite and that they will have to be tested in the courts. According to several of these agents and to a number of the steamship representatives, the steamship men have been made scapegoats, being billed with the additional charges and told to take what steps they can to reclaim them. The railroad companies are standing pat on their original refusal to absorb 5 cents per ton wharfage.

Up and Down the Lakes

By A. A. Eiben

IT is reported that a new company is being organized at Duluth for the purpose of operating an independent line of package freighters between Duluth and Buffalo next year, in lieu of the service now maintained by railroad owned package freight lines. Under the provisions of the Panama canal act, effective in December, the lines now operating will be severed from railroad ownership and the proposed new company will substitute a new line. The names of persons identified with the new organization have not as yet been disclosed, but it is understood that they are in no way connected with a similar organization now being formed at Buffalo by W. J. Connors. It is the intention of the new Duluth company to place several vessels in commission next season on the through route, even if the railroads in their appeal to the courts should be successful in delaying or preventing enforcement of the interstate commerce commission's order for separation of the rail and lake lines.

* * *

Rumors are current of a proposed merger of lake package freight lines and the formation of a $20,000,000 corporation for the purpose of operating a fleet of 40 or more vessels on the lakes, the lines mentioned in connection with the amalgamation being the Erie, Anchor, Lehigh, Mutual and Western lines. W. J. Connors of Buffalo is said to be the leading spirit in the new enterprise.

* * *

Some lake vessel managers are planning to operate their vessels after the expiration of regular insurance at midnight, Nov. 30, but they will have to get pretty fair rates to pay for the extra insurance. The extra rate for sailing up to Dec. 5 is 0.5 per cent, up to Dec. 8 0.75 per cent and up to Dec. 12 1 per cent.

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The steamer JOHN J. ALBRIGHT of the Mitchell fleet, which has been out of commission since September, 1914, was recently fitted out and is now in service.

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The steamer F. T. HEFFELFINGER of the Tomlinson fleet, downbound with ore, and the steamer ALLEGHENY of the Anchor line, collided in a dense fog near the United Fuel & Supply Co.'s dock, Detroit river. ALLEGHENY was slightly damaged above the water line, but the injury to HEFFELFINGER was more severe, about 20 plates being damaged, incurring a repair bill of approximately $8,000.

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The ore shipments from Marquette docks up to Sept. 1 were 1,773,653 gross tons, a gain of 723,000 tons over the same period last year and the indications are that they will reach the high water mark of 1913.

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The first of three steamers building for the Clyde Steamship Co., New York, at the Ecorse yard of the Great Lakes Engineering Works, Detroit, was recently launched. The new vessel is of Welland canal size and will leave for the coast as soon as she is completed. The Great Lakes company expects to deliver the three steamers by Nov. 1.

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The usual advance in wages of men employed aboard ship will take effect Oct. 1 and aside from the licensed officers practically all of the men will receive the increase.

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Capt. C. D. Ross, master of the steamer F. D. UNDERWOOD of the Erie Railroad Lake line, was recently transferred to Lake Keuki, N. Y., to become superintendent of the Erie line at that point. R. B. Wilkinson will succeed Capt. Ross as master of UNDERWOOD.

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The great demand for vessels on the coast continues and it is reported that a dozen Canadian lake vessels which were built abroad and are fitted for salt water service will be sold to coast parties shortly.

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The Coast & Lakes Contracting Corporation was the lowest bidder for repair work to the Buffalo breakwater, bids for which were recently opened by the government engineer at Buffalo.

* * *

The steamer CITY OF TRAVERSE of the Graham & Morton line was sold recently to a St. Joseph, Mich., concern who will dismantle her and use the hull as a dry dock for smaller craft.

* * *

The new freighter W. F. WHITE, owned by the Limestone Transportation Co., Rogers, Mich., left the Lorain shipyard of the American Shipbuilding Co. Aug. 31 for Erie, where she loaded coal for Menominee, Mich.

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Red Hot Tips From the Trade

Pertinent Suggestions and Personal Gossip

THE George A. Boyden Pump Co., Baltimore, Md., has issued an attractive booklet describing its heavy duty water pumps, which are adapted particularly for use on shipboard as fire pumps, bilge pumps, boiler feed pumps, etc. The Boyden pump is so designed that the stuffing box is eliminated. The steam and water cylinders are continuous, being separated by the two piston heads, connected by a suitable piston rod. All of the steam valve parts are placed in the steam cylinder head and the water valve parts are located in the head of the water cylinder. The cylinder heads may be easily removed for inspection and adjustment.

Docks Many Craft

The New Haven Shipyard, Inc., West Haven, Conn., organized May 8 to succeed the J. E. Mar & Son Co., shipbuilder and repairer, is now operating its 350 ton marine railway. Several oysterboats and barges were recently docked. Among the former are GORDON ROWE, RUEL ROWE, SYLPH, SMITH BROS., F. W. MANSFIELD & SONS CO. and IDA M. MCNEIL. The barges include IRA ROOT, THOMAS WHITNEY and SEALSHIPT. The yacht LINNETT and the towboat CLARA MCWILLIAMS also have been recently docked. The steamers WILLIAM M. MERWIN, WILLIAM CUMMINGS, CITY POINT, SEALSHIPT 38, AUTOMATIC, H. S. LOCKWOOD and GOVERNOR are booked for docking, as are the schooner ANNIE G., the towboat SKIP JACK; and a derrick scow. A 35-foot cruiser for G. H. Whitney was recently launched.

Joseph Battles has been appointed district sales manager for the Terry Steam Turbine Co., Hartford, Conn., covering the states of New Mexico, Colorado, Wyoming and the western portion of Nebraska. Mr. Battles' headquarters will be at 326 First National Bank building, Denver.

A portion of the proceedings of the Second Pan American Scientific Congress, which will be held in Washington Dec. 27, 1915, to Jan. 8, 1916, will be devoted to marine and transportation interests. The congress will be held under the auspices of the government of the United States. William Phillips, third assistant secretary of state, will be chairman. The Society of Naval Architects and Marine Engineers has appointed the following official representatives: Daniel H. Cox, secretary, 29 West Thirty-ninth street, New York; Admiral D. W. Taylor, Navy Department, Washington, D. C.; H. A. Magoun, New York Ship Building Co., Camden, N. J.; Capt. Charles A. McAllister, U. S. Coast Guard, Washington, D. C.

Paper Named

The Northern Navigator is the name selected for the newspaper now issued daily on the steamers HURONIC, NORONIC and HAMONIC of the Northern Navigation Co. which ply between Hamilton, Ont., and Duluth, Minn. More than 10,000 names were submitted by contestants. Thomas Humphries, Detroit, was awarded first prize, a ticket for the cruise from Sarnia to Duluth and return. "Northern Lights" was selected as the second best name. Frank W. Dove, Montreal, was the first to send in this name and was the company's guest on a trip from Sarnia to Port Arthur and Fort William and return. Miss C. M. Leavins, Toronto, was the first to submit the title "The Nornavic News" and was awarded third prize, a cruise from Sarnia to Sault Ste. Marie and return.

Dake Catalog

The Dake Engine Co., Grand Haven, Mich., has issued a new attractively printed 48-page catalog, describing its line of marine hoists, capstans, windlasses, steering gears, etc. In addition to illustrations and complete descriptions of the various marine appliances, which have been manufactured by the Dake company for a number of years, a description of a new elevator or gang plank hoist is included. This hoist is especially adapted for raising and lowering gang planks on river steamers.

A handsomely illustrated 24-page booklet describing electric arc welding has been isued by the Lincoln Electric Co., Cleveland. The underlying principles of arc welding practice are discussed in detail. Definitions of various methods of welding are given and the operation of the electric arc is explained. The methods of welding steel castings, rolled steel and wrought iron are described. In addition the booklet contains a complete description of the Lincoln arc welder, together with photograps showing intricate welding jobs.

C. M. Power, general sales manager of the Standard Chain Co., Pittsburgh, has closed a contract with the lighthouse department at Tompkinsville, N. Y., for all of its chain requirements for the fiscal year 1915, amounting to 1,000,000 pounds. All of the chain will be high grade, especially adapted for lighthouse service.

The Joseph Dixon Crucible Co., Jersey City, N. J., published an interesting plate in the September issue of *Graphite*, showing a unique method of illustrating and designating the various types of sailing vessels.

Pump Pamphlet

The Blackmer Rotary Pump Co., Petoskey, Mich., has issued an interesting 16-page pamphlet describing its various types of pumps suitable for use on board ships. Special attention is given to Blackmer bilge pumps. It is stated a barge in which one of these pumps was installed became water-logged. The owner pulled the vessel on the mud in New York harbor and cleared it with the Blackmer bilge pump, saving a wrecking bill of several hundred dollars.

The Blackmer Rotary Pump Co., Petoskey, Mich., also has issued a 32-page catalog, describing its rotary pump. The catalog is handsomely illustrated and contains a complete description of the Blackmer rotary pump, together with detailed specifications.

The Stow Mfg. Co., Binghamton, N. Y., has issued an interesting 20-page folder describing various types of portable drills, grinders, screw drivers, buffers, etc., manufactured by this concern.

The Engberg's Electric & Mechanical Works, St. Joseph, Mich., has established an office at 39 Cortlandt street, New York, to handle the Engberg direct-connected generating sets, searchlights and electric-hydraulic valves in the eastern territory.

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